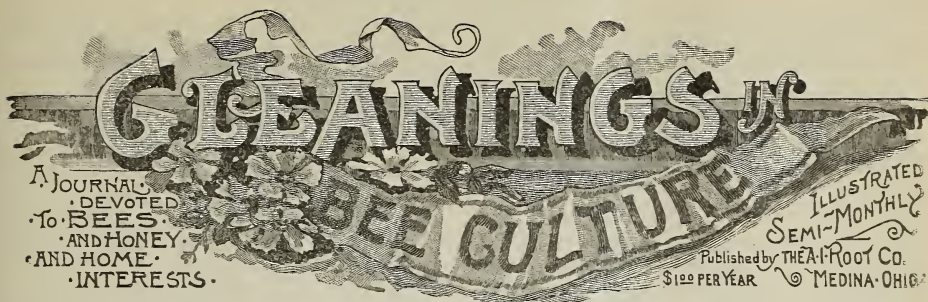


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No. 6.



CAN'T WAIT—hardly—to see bees come out of cellar.

EXCHANGE of virgin queens among bee-keepers is recommended in *B. B. J.*

MY ONE HIVE of bees outdoors had a nice fly Feb. 26, the first right good day for a flight since Nov. 10.

PHACELIA is much talked about by the French, not only as a house-plant but as a forage-plant. Has their kind of phacelia been tried this side the water?

My cellar was swept out for the first time Feb. 20, yielding a trifle more than a bushel of dead bees, loosely filled, and stroked measure. That from 157 colonies.

SEAL HONEY at 180° to keep from granulating, says Ernest, p. 181. R. McKnight, in *Review*, says 160°. Which is right? [Never tried 160°. It may answer just as well.—ED.]

IF A. B. ANTHONY learns to put sections in T supers as given by Emma Wilson, p. 179, 1895, he'll never again use the slow way given on page 177. [See footnote to Hilton's T-super article elsewhere.—ED.]

C. WEYGANDT advises that, where two races are kept in the same apiary, the hives of one race face east and the other west. The queens and drones of those facing east will often fly as early as 9 o'clock, the others not till 3.

SWEET CLOVER now turns up in a new role. Pfarrer Weillinger, in *Leipziger Bienenzeitung*, says gather it when in bloom and dry it, then put between the empty combs in your comb-closet, and the wax-moth won't touch the combs.

DOCTOR DUBINI, in *L'Apicoltore*, sides with my assistant against me, and says laying workers often have a plurality of eggs in worker-cells. Anyway, I'll stick to it that they prefer drone-cells, and I have good backing in one G. M. Doolittle, p. 177.

HONEY is quoted in the Sydney (Australia) *Herald* thus: Garden honey, 6 cents; bush honey, 4 to 5 cents. [They have long seasons and at least four times as many months of honey-gathering. That means low prices.—ED.]

IN TRANSFERRING the way G. A. Dyer proposes, p. 180, he must count on the queen sulking just about 5 days before she lays an egg, when she's shut on the foundation under the excluder. Besides, he'll have the honey gathered in that 21 days mostly in the old hive.

FEBRUARY 20 the thermometer went lower than any previous date this winter—15° below zero. Curiously enough, on that very day I got a paper from an Australian friend, reporting Jan. 13 as the hottest day ever known at Sydney, 108.5 in the shade, and in some places 120!

A STING about 5 inches long is sent me by E. M. Kellogg. I'd hate to have bees with such stings; but, fortunately, this belongs to a fish, *stingaree*, or *sting-ray*. It's barbed, and looks much like the magnified picture of a bee's sting, but makes a much more dangerous wound.

GEO. F. ROBBINS says, p. 172, that, with section-frames and brood-frames in upper story, the bees work old stuff into the new comb. I used to work lots that way, and had cappings darkened, but never had any trouble if I put down the brood-frames before they commenced capping the sections.

FOR FASTENING foundation in brood frames, try a saw-kerf $\frac{5}{16}$ wide and $\frac{1}{4}$ deep, fastening slightly with a few drops of wax from a burning beeswax candle, and you'll not likely be willing to fool with any other way of fastening afterward. Then you can have top-bars fully $\frac{1}{8}$ deep, and have whiter sections.

HEATHER HONEY has always been considered too thick to extract, but Gravenhorst's *Bienenzeitung* reports success by a high speed, and, instead of the ordinary wire cloth, having strips wide enough to support two rows of cells, leaving two rows between unsupported, then when these two rows of cells are extracted the position must be shifted so as to extract the other two.

SLIPSHOD ways of handling comb honey are justly decried on pp. 171 and 183; but the same thing applies with double force to extracted honey. Take the honey itself that's sealed up in the worst specimens of section honey you can find, and it's away ahead of much of the miserable, thin, soured extracted so often to be found. [I agree with you.—Ed.]

SKYLARK, p. 169, wonders that bee-keepers differ so much in their views while there's no difference of opinion among dairymen or poultry-breeders. Didn't know before that nobody kept cows or chickens around Skylark's way. [But, say; is it actually a fact that the dairy and poultry men don't have differences of opinion?—Ed.]

DOOLITTLE tells in *American Bee-keeper*, that, in a colony that gave him 566 lbs. extracted honey, the queen had brood in 32 frames fully equal to 15 frames of brood coming out to the wood all round. He figures that, during linden, there were in the hive 160,700 bees. [That would mean about 30 lbs. of bees alone. No wonder they made a record. Too bad he hasn't that queen to breed from now.—Ed.]

THE EDITOR, page 167, thinks I oughtn't to chuckle over that vote in favor of T supers, because the voters were nearly all "T-super men." What puzzles me is to know how many of them would have voted for T supers if they hadn't been "T-super men." [That's just it. Or, in other words, a Democrat will usually favor free trade, or tariff for revenue only; and a Republican, protection. But, say! if Mr. Taylor and I count votes right, the T super doesn't get the palm. See Editorials.—Ed.]

A FISH DIET is suggested as a change for the editor of GLEANINGS, by Hon. R. L. Taylor, in *Review*. Good idea. 'Spect, though, there had been a scarcity of fish in the Taylor mansion for some time before that idea was penned, to the effect that there couldn't be the same deliberate thought given to an editorial comment that the printer put right where it belonged, as there could be if the printer packed the comments all in a pile somewhere else, so you'd have to turn over the pages each time to fish 'em out. [See editorial, elsewhere.—Ed.]

INTRODUCING. Here's the easiest way yet—if it always works. Herr Korndoerfer says, in *Imkerschule*, without hunting out the queen to be removed, blow chloroform into the hive—not enough to make many bees drop; then let the new queen run in, and that's all. He says the chloroform makes them forget the past. Hardly looks possible, but it's easy to try. [Queens very often will be accepted if merely let into the entrance, without chloroform or any thing else. When we didn't care much for the queens we let 'em run in and take their chances. Strangely enough, but a small percentage were lost. Bees seem to be more in-

clined to accept queens let into the entrance than when let loose into the top of the hive by removing the cover.—Ed.]

COLORS OF HIVES. J. B. Kellen, editor *Luxemburg Bienenzeitung*, calls attention to the fact that, if the absorbing power of white be placed at 100, that of yellow will be 140, light green 155, turkish red 165, light blue 198, and black 208. [A couple of years ago, on a very hot sunny day, I put my bare hand on a yellow hive-cover, then on a white. The former was so hot I could not bear my hand on it; the latter was quite comfortable—just barely warm. This I tried on a lot of other white and yellow covers, with the same result. I am quite ready to believe these figures.—Ed.]



INSANITY OF BEE-KEEPERS; WHAT MAKES LOW PRICES ON HONEY?



I wish to make a few remarks before I say any thing. This is not my usual style, for I generally "pitch into" my subject just as I used to pitch into the river, when I was a boy, whether it were head or heels foremost.

If a merchant is making money on his business, he does not blow about it; neither does he publish it in the papers, and scatter it broadcast over all the land. If an investor in any kind of stock sees a large amount of money in it he quietly buys up all the stock he can get, and says nothing about it. And so through all business circles, through all trades, professions, and occupations; the successful man is as dumb as an oyster. The time is out of joint, and we may well pause to consider our situation, and look around for a remedy. The normal condition of bee-keepers at the present time is insanity—a state of actual, acute, and rampant insanity.

The successful bee-keeper is not like the other business men noted above. The greater his success, the wilder and longer he will blow his horn. In fact, his horn seems to be a "harp of a thousand strings." If one is at rest, a hundred more are in sonorous motion. He seems to take delight in teaching his neighbors, acquaintances, and even strangers, "how to do it." I know from experience that this passion for teaching bee-keeping is not confined to publishers, supply-dealers, or queen-breeders, whose interest is superadded to their love of the calling and this characteristic mania for spreading it all over the land. Why this insane and suicidal course should be pursued I can

not tell. There is something in the pursuit itself—something in our passionate love for it—that makes us proud and happy to tell and teach it to others. We are like the victims of animal magnetism, or hypnotism, as it is now called. We are under the will of a master whom we can not resist. Now, here is just where the insanity comes in. Every 1000 pounds of honey that is produced—in excess of the year before—brings down the price of honey. Every new bee-keeper who is started in business brings down the price of honey. Why, then, are we insane enough to start them? Our teachings, and our figures showing large gains, do the business, and a rival is raised up by our own hands to compete with us in the same market, with a product just as good as ours. But although I know it is so, I never *could feel* that a bee-keeper was a rival of mine. But he is to all intents and purposes; for if I had no rivals I could now get a dollar a pound for honey. It was once two dollars on this coast; and it is within the memory of living men when it was 50 cents in the markets of the Eastern States. What reduced it to its present insignificant price, but an influx of amateurs into the calling? An amateur soon becomes a proficient, when there is money ahead of him. If this mania were only confined to those whose interest it is to make more bee-keepers, there would not be such an enormous increase in their number. For one *they* make, bee-keepers themselves make a hundred. Even I—*Skylark*—when I ran short of undeveloped intellect, did some preaching to an audience of one on this subject, thus:

"Yes, friend Rollins" (he was rich, but still had an itching palm for the almighty dollar), "bee-keeping is better than a gold-mine; for after you get the mine, and put on it and in it thousands of dollars, you don't know when your load or vein may run out, and leave you with thousands of dollars' worth of expensive machinery on hand. You have a large rough lot of mountain land covered with black sage—the best pasturage in the world for bees. What would you think of a man who had thousands of acres of good pasture for horses and cattle, and not a single head of stock on it?"

"Well, Skylark, I declare you have opened my eyes. I never looked at it in that light before; but I see clearly now that I am losing money."

"Losing money! I should think there were thousands of dollars going to waste on that land every year."

"Well, Skylark, give me an idea of the probabilities of bee-keeping, so I shall not go into it blindly. I want to see my way clearly to success. You know I have money to go into the business on a large scale. When a man wants to make money there is no use in playing with copper cents."

"No, copper cents don't count up fast enough. How many colonies would you begin?"

"Well, Skylark, I will buy a thousand hives, as this promises to be a good year—say, a thousand."

"Well, if you never lose any bees, and double every year, the rate of increase and amount of honey—100 pounds to the hive—might be as follows:

	Colonies.	Increase to	Honey, lbs.
1st year	1,000	2,000	100,000
2d "	2,000	4,000	200,000
3d "	4,000	8,000	400,000
4th "	8,000	16,000	800,000
5th "	16,000	32,000	1,600,000
6th "	32,000	64,000	3,200,000

"The sixth year, according to this, you would have 3,200,000 lbs. of honey. At even ten cents per pound this would be an income of \$320,000 a year, besides the \$310,000 made in the preceding five years. Caesar Augustus! What a world of bees and honey! Why, you could control the honey market of the world; establish houses for its sale in all the principal cities in Europe and America; buy up all the honey that is offered below your price, and then corner the market, and have it all your own way."

"Skylark, you are a brick. I never thought you had such extensive schemes in your brain. I see now it is only the want of capital that keeps you down, or you would be one of the richest men on the continent."

"Yes, friend Rollins, you say truly it is the want of capital that keeps me down. Just now I want a round 1000 dollars. Can you lend it to me? It would be a great accommodation, and place me under great obligations to you."

"Well, Skylark—ahem!—er—Skylark—er—I have invested all my money except what I shall need in this business. It would be impossible, but I am very sorry."

Now, I knew his check was as good as gold, from San Diego to Puget Sound; but just look at the meanness of the man. After I had put him in the way, and given him my full permission to make \$320,000 annually, besides the \$310,000 which he had made in the preceding five years—to refuse me the loan of a paltry thousand dollars! The deep ingratitude of some men is incomprehensible. Shall I give him a stunner, now, that will knock the stilts from under him, or let him go on and buy the 1000 hives and lose his money? Mr. Editor, my undeveloped intellect pointed one way, and my kind benevolent heart pulled another.

"Rollins," I called out to him, as he turned to go away, "look here a moment."

"All right, Skylark, what is it?"

"Well, be careful about your speculation in bees, for there are many losses you are not aware of at the present time."

"Why, Skylark, I thought it was all plain sailing. I get the bees, and they work for nothing and board themselves—isn't that the idea?"

"That is all true in a good year—with a little skilled labor thrown in. But in a bad year—and bad years will come—you will have to feed two dollars' worth of sugar to each and every one of your colonies—amounting to \$64,000. I think it would be better for you to build a beet-sugar factory. A good factory could be built for \$50,000, and you could make your sugar cheaper than you can buy it. Oh, yes! then there is robbing. You must be wide awake when that begins, and it does begin with feeding. Once the robbers get a sniff of the fresh feed they will rob all the weak hives in the apiary. When they are finished, the strong hives will rise up in arms against one another. It doesn't much matter which whips—you are the loser, for millions of your bees are slain. Oh, yes! then there are the fires that occur every year in the dry season. They are just the thing to cause a big loss, when they sweep over miles of mountain and valley, as they do sometimes. But why tell you of losses by flood and fire; by skunks, bears, and other wild animals, when there are greater enemies within the hives? Yes, there is foul brood that sweeps away whole apiaries in a single year—as virulent and as infectious as the smallpox—traveling through all the surrounding country, carrying death and utter annihilation wherever it goes. Then there are losses by death of queens, by fertile workers, bee-paralysis, diarrhea, mumps, measles, whooping-cough, etc. But the worst of all is the toothache and earache. These coming in collision will cause the bees and sometimes the bee-keeper to dash themselves to death against the first post, tree, or rock they come to. Now let me tell you about the ravages of the moth-worm—"

"Skylark, you may stop right there. I have enough of bee-keeping."

"Well, but, Rollins, I am not done yet; for I haven't told you of the thousands of stings, and how to cure them."

"That's enough; I don't intend to get them, if I can help it. Good-by."

"Good-by, friend Rollins; but if you wish any other information on bee-keeping, always consider me ready to give it freely."

"I don't want it," he yelled back.

There is one (would-be) extensive bee-keeper killed, anyhow. Yes, killed as dead as a salted mackerel. If all bee-keepers would give the same vigorous encouragement to every applicant for advice, honey would advance a hundred per cent within two years, and more too. But friend Eugene Secor is not of my way of thinking. In *Review*, page 19, after giving us a very good article on the depressed state of the market, the adulteration of our product by middlemen, etc., he winds up by giving us two remedies as follows:

1. Produce only comb honey, and put it up in such "taking" packages that it will find its way on to the

tables of those who can afford to pay for *luxuries*. That's what comb honey is, and always will be.

2. Encourage small bee-keepers (the adjective has reference to numbers of colonies).

Remedy 1 is a good one, and I believe it is the only one that will ever completely stop adulteration. If there is no extracted honey (or very little—there always will be a little from broken comb, etc.), the temptation is gone, and the extracted that gets into the market will go up as high as comb.

Remedy 2 stuns me. How encouraging small bee-keepers could tend to advance the price of honey, I can not tell. Has friend Secor got it too—that insane mania, common—yes, universal—among bee-keepers? Are we all mad? Is there not one sane man to call a halt in the manufacture of new bee-keepers? Mr. Editor, is there any proof now at hand—is there any tangible probability that you can point out—that we shall not all be in crowded asylums in less than five years? Here are my remedies:

1. I will place friend Secor's first remedy, to produce only comb honey.

2. Stop, by every means in your power, the production of *disrupted* honey, for that is the name by which it should be known now.

3. Discourage, by every means in your power, every *would-be* bee-keeper, even if you have to floor him with a skillet.

4. Let us get from some foreign country, or breed a race of bees, with long and fiery stings—a race with coiled-up, hidden stings, that they can dart out $1\frac{1}{4}$ inches into the amateur. This will settle him.

These four rules put into effective operation would advance the price of comb honey to 40 cents a pound in less than two years, and in three it would be 50 cents.

Here is the bee we want. If it is twice the size of our Italians, it must have a long and fiery sting. Below is an extract from an article by J. E. Crane, *Review*, page 17:

In looking over an old volume of the *American Bee Journal* I came across the following under the title

A CHINESE BEE.

"The Apicultural Section of the Entomological Society at its annual meeting in Paris, August, 1874, made many interesting statements. Mr. Durand Saint Armand, a government officer in Cochin China, states that the country possesses a bee twice the size of ours, which, consequently, ought to have a proboscis long enough to extract the honey from red clover, which is known to be very abundant. This bee is found in great numbers all along the coast, in a wild state, in hollow trees, and the natives hunt them for their wax. The extensive forests of this country are leased for the product of wax which is to be sold to the Chinese."

Here, then, would appear to be our bee twice the size of *Apis mellifica*, and living, like them, in hollow trees. Can not our bee-keeping friends in France give us more information in regard to these bees? I believe a large portion, if not all, of Cochin China is now in the hands of France.

If you would like to have any of your friends see a specimen copy of Gleanings, make known the request on a postal, with the address or addresses, and we will, with pleasure, send them.



FREE BEE-LITERATURE.

SHOULD BEE-KEEPERS PETITION CONGRESS TO
PUBLISH AND DISTRIBUTE BEE-LITER-
ATURE FREE AT THE EXPENSE
OF THE PUBLIC?

By Thaddeus Smith.

This whole matter seems to me wrong. It proposes to tax the general public for the benefit of a particular and comparatively small class. It makes the government a competitor of the publishers of bee-literature. It is unjust to the tax-payers. It is unjust to the authors and publishers of bee-literature, and can be of no great benefit to bee-keepers in general. It is not claimed that the book published by the government contains any thing of especial importance to practical bee-keepers that is not found in our excellent standard books on the honey-bee, or may be learned through our many bee-journals and pamphlets on the subject. These statements can not be successfully controverted, and scarcely need to be enlarged upon to show that the free publication of this book for general distribution is entirely unnecessary. In the manner of distribution by Congressmen it will not reach those who need it most. The most of them would fall into the hands of that large and intelligent class of bee-keepers who *read*, and are already well posted on the subject. They would be the first to make application for it, and I have no doubt that the 1500 who have already applied for the book are all of that class, and are readers of *GLEANINGS*. It will, no doubt, be interesting reading to them all, but we can not say that it would give them much practical information that they had not before. Congressmen would send many of these books to their constituents who have no interest in bee-keeping, and never will have, and hence they would be thrown away.

This matter is very much on a par, though, in a comparatively small way, with that gigantic humbug the free distribution of common garden and field seed by Congress, which fraud has been lately so faithfully and completely exposed by Secretary of Agriculture Morton. Political demagogues, though they be as talented as Senator Vest, may fume and fret and use their wit and eloquence in sarcastic denunciation of the Secretary, but every candid person can see that the Senator has failed to meet the facts and arguments of the Secretary, and failed to give any good reason why Congress should establish an immense seed-store at a cost of \$150,000 to the public, when the country is now so well and cheaply supplied by the legitimate trade of reliable seedsmen. Neither is it neces-

sary for Congress to publish bee-books for the public, when the same information can be obtained from the trade at such reasonable prices. I will quote a few lines here from an editorial that I saw in a daily paper yesterday:

After being in session two and a half months, the Congress House has succeeded in passing a bill increasing from \$130,000 to \$150,000 the appropriation for the purchase and free distribution of tobacco-seed that produces mullein-plants and lettuce-seed that turns out to be Russian thistles."

This is the kind of sport that is being made of this business. Only a few days ago a member of Congress arose in his place in the House of Representatives and asked for information as to how much had been appropriated to aid the experiment to cross the honey-bee with the lightning-bug, so as to produce a new kind of bee that could gather honey at night by its own light. This, I suppose, was intended as ridicule of just such application for appropriations as I am considering. This is the result of communications like Mr. Hilton's frantic call upon all bee-keepers to petition Congress to issue 100,000 copies of Mr. Benton's book. Mr. Hilton says, "I have told them there are 300,000 bee-keepers," and he insists that everybody should write, so as to "make them *think* there is a million of us." But he gives no reason why it is so important to have this book distributed free that we should try to practice a deception on Congress to have it done.

I have not a word to say against the merits of Mr. Benton's book. I consider him one of the best-posted apiarists in the country, and I read with interest every thing that I see from his pen. I have not read his last book, but am anxious to do so as soon as I can find out where to buy it. But I can not join Mr. Hilton's clamorous brigade in petitioning Congress to do an injustice.

Frankfort, Ky., Feb. 21.

[Since the above was written we have received one other protest in a similar vein from a prominent bee-keeper and ex-president of the North American. The letter is not for publication, so I do not give it here. Take it all in all, friend Smith's article should be read carefully and acted upon accordingly. But it seems that not more than 15,000 will be printed in any event. See Editorials.—Ed.]

A CAPITAL WAY OF SELLING HONEY AROUND HOME.

A GOOD OBJECT-LESSON.

By Geo. L. Vinal.

□ I believe the honey-producers owe it to themselves to educate the public about honey. To illustrate:

Early last fall I extracted some honey. Not having labels or jars I ran it into an alcohol-barrel. I got a small scale, a large bell, and started. When I came to the village I com-

menced to ring my bell like the town crier of old. I soon had a call.

"Hi, mister! what you got to sell?"

"Honey."

"How do you sell it?"

"Fifteen cents a pound; eight pounds for a dollar."

"Will you let me see some of it?"

"Yes: bring a dish, please."

I let some run out. It was tasted, smelled of, etc. Then I was informed that *that* stuff was "molasses," and I could not convince them or any one else that it was honey.

Becoming disgusted I drove home. Thinking it over I made up my mind that the people wanted educating, and I proposed to give them an object-lesson. Getting some cards printed, saying that, if it was warm and pleasant Saturday I would give a free exhibition on the public square at 2:30. The next Saturday was a fine warm day, and at the appointed time I drove up with a large farm-wagon, having on it an observatory hive, a three-frame nucleus, one large hive without bees, an extractor, oil-stove, tin pails to heat water in, uncapping-knife and box, ten supers with uncapped combs, water-pail, and the same old barrel of molasses.

Mounting the deck seat of the wagon, and taking an old fish-horn, I gave them a fish-horn and bell solo (it was not so *low* but that the whole village could hear it). Collecting my audience I gave them a talk on bees and honey with a great deal of truth and information, and some nonsense mixed in, showing them the bees in the observatory hive, taking a frame from the nucleus and then from the supers, explaining the mode of uncapping and throwing it from the combs. I got a boy in the crowd to turn the crank of the extractor, letting it run into the pail; and when it was about half full I turned it into the barrel. Some of the combs I ran through the extractor five or six times, and it worked just as well.

The result was, I sold my barrel of honey and all I had in the combs, and could have sold more if I had had it, and convinced the public that extracted honey could be in barrels and not be molasses.

When I got home and counted up my cash I found I had \$79.75 cts. for about 2½ hours' work. As nearly as I could judge I got about 20 cts. per lb. for the honey.

A week after, I went to a town of about 7000 inhabitants, about 6 miles from here. I had the same show, and two barrels of honey. The police saw that no one disturbed me. I sold all my honey, took \$165 in cash, and never moved my wagon. Another community was educated. I go there now and supply the grocers, and have no trouble.

I had a heap of fun answering the gibes and guys of the crowd, and all the time kept selling honey, and educating the people to the fact

they could get pure extracted honey. I will state that I carried a lot of quart and pint jars, all labeled, and drew the honey from the barrel into them. I carry to that town now only jars filled. I think that, next fall, I will give an exhibition of the same kind in all of the surrounding towns—that is, if I have any honey.

P. S.—A person with kidney trouble can eat all the honey he wants to, and it will not hurt him, as chemical test gives grape sugar; and it will not hurt him as will cane sugar. I know it from experience.

Charlton City, Mass., Feb. 24.

[You have given us some good ideas on selling honey, especially in the line of breaking down prejudice and creating a permanent demand. I have no doubt much can be done in the way of educating the public, and selling from the wagon. Yes, I am not surprised that the *modus operandi*, as well as the "horn-blowing," should draw a crowd. The general public know very little about the method of taking honey; and a good man—i. e., a good talker, can sell honey like hot cakes.

Patent-medicine men have long known and have availed themselves of the plan of selling from the wagon; and that they introduce and sell the goods we all know.—ED.]

PEDDLING HONEY.

HOW TO SPOIL A GOOD MARKET AND HOW TO BUILD IT UP AGAIN: FOLLY OF SELLING THIN UNRIPENED HONEY; A READ-ABLE ARTICLE.

By Dan White.

That interesting article by Geo. L. Vinal, in Feb. 15th GLEANINGS, made me feel like saying something. I am something of a honey-peddler myself. George has started out in pretty good shape. There is a possibility of his getting side-tracked; and let us encourage him all we can to keep right on and not make the mistake many do after we have worked up a splendid honey-trade.

Some ten years ago I had a controversy in a farm journal about extracted honey. Don't you know I got such a thumping that I concluded the best thing I could do was to keep still? Yes, and I have kept still ever since. At that time I simply gave my individual experience. My opponent not only gave his experience, but referred to articles in GLEANINGS, and quoted A. I. Root and a host of other prominent bee-keepers. This chap told us all to extract long before the honey was ripe—the thinner the better. He explained how easily it came out of the combs; then he told us to put it in jugs, pans, and cans; cover with gauze cloth, and how nicely it would ripen up! He was loaded with experience; had gone through the details. I had never tried all this, so you can imagine the thrashing I got. Of course, I was somewhat vexed, and I would not try his plans anyhow. Oh, yes! some years before this, come to think, I did extract and peddle rather thinnish

honey. I was well acquainted, you see, and, as I supposed, had worked up a splendid lot of customers. My experience at that time would compare favorably with what friend Vinal tells us. I answered all those questions; would almost hold up my hand that it was pure bees' honey, etc. Of course, I told the truth all the time; but whether you believe it or not, the next time I went over this territory I got into a hornet's nest. You know every village has one or two loud-talking women. Unfortunately, on this occasion, at the head of the street, mentioned honey to one of those very women. She talked so very loud that it aroused the whole neighborhood. Most of them were my customers too. It did not take me very long to make up my mind that new territory would be the most profitable. Before I left the street I heard one lady say, "He waters his honey;" and another one said, "He adulterates it." I tell you I almost wished I had never seen any honey. You see, my talk and trade were mostly with the ladies, and may be you don't think it was killing for some of them to talk as they did. Our friend Vinal could not have drawn the attention of some of these ladies by talking about the weather, mockingbirds, or any thing.

About this time I had invested considerable in bee-supplies, hives, etc. Honey was coming in by the ton, and I did want the money for it; but to sell it was a stunner. Let me tell you how a change came about. I was compelled to carry over winter quite a lot of honey. I felt somewhat discouraged, and neglected to do any extracting the next season until some time in August. Well, now, didn't I sweat, uncapping and whirling that extractor? Yes, sir! and that honey weighed 12 pounds to the gallon. My family tested it thoroughly, and decided it the finest honey they had ever eaten. We ate it every meal, and sometimes between meals, so you see this gave me confidence, or courage, to try peddling again. I put 150 pounds in my can. I sold about 100 pounds, and gave away the remainder. I made apologies to those I had sold to before; explained my mistake, and wanted to give them a few pounds of honey to settle with them. My plan worked well; but I noticed when I went around again after the gift, even my thin-honey friends took hold very cautiously. A pound or so was enough for a starter. It took me several years to again get the full confidence of some of them.

I tell you I am real earnest over this matter. Just think of the thousands of families who seldom taste honey; look over your own territory, and you will be surprised how many there are of this class. Don't you know this is all wrong, when some of this good white-clover and basswood honey, just such as I tell about, will gradually fetch them into line and hold them in line if you do your part? I have a large number of customers who annually order

from 50 to 100 pounds of extracted for their own family use. Only last season, or 1894, I got a rather limited supply of sweet honey. Yes, it tasted sweet, all right, but somehow the little basswood and no white-clover honey was mixed with something that made it slightly off in color; also did not have just the right taste; but it was up to standard in weight. Now, I believe a majority of us would have called this honey good enough to offer to our best customers. We would not expect at least any serious harm; but let me tell you about it. I wanted some of those greenbacks and silver dollars. I had my doubts about it, but I rather reluctantly loaded up and went to town. I commenced right on the start to tell my customers that honey this season was not quite as good as usual. Those who wanted 50 pounds or more, I would persuade them to cut down their usual supply. In one instance a 50-pound customer wanted their own way; the whole family tasted while I talked. I finally got them down 10 pounds—they took 40. Now for the result. This season, 1895, my honey was never better. When I called at this place with the usual good-morning, I told them I was around with honey again. The little children playing in the front yard didn't even look up.

"Well," says the good woman, "somehow we don't like honey as we used to. We have kept putting it on the table every day, but we have quite a bit left that we got of you last season."

I referred to what I said the season before.

"Now," said I, "you bring out that old honey and I will trade you new honey even up for it." The trade was made. "Now I want you to take enough more to make your usual 50 pounds." She hardly thought it best, but finally let me have my way."

Just a few days ago the man of this house called out from the other side of the street:

"Say, White, we are about out of honey; can we get about 20 pounds more?"

"No, sir," said I, "we are all sold out."

"That's too bad. We will see we get more than 50 pounds next season."

Now, then, this was not the only instance, because I had to do more or less talking all the way round. I noticed the children did not scamper ahead to tell their ma the honey-man was coming. Don't you see my customers were getting tired of honey, and they themselves did not know why it was? Now, the rest of you can do as you please; but hereafter, if my honey is not first-class in every respect my bees will have a chance to eat every pound of it.

Now, I wonder who is going to jump up and call me a crank, and tell us they can evaporate thin honey better than to let the bees put on the finishing touches. Don't you do it; for I tell you right now I won't try it. Don't do it, even if you are an expert, and do a fairly good job at it, for you may induce others to try it,

and they will make such a bungle of it they will complain of an overstocked honey-market.

I believe it is second nature for the most of us to do as little labor as possible, and get good returns for the same; but in this case it seems to me we must please our customers whether we are just suited or not.

New London, O.

[For further suggestions on this subject see Editorials.—Ed.]

MISCHIEF IN THE APIARY.

THIEVES AND OUT-YARDS; WOULD IT BE AN ADVANTAGE TO HAVE AN OUT-YARD?

By Dr. C. C. Miller.

On page 903, last year, is a condition of affairs which rouses my sympathy, as a somewhat similar experience has more than once roused my indignation to such a pitch that I'm afraid it wasn't always "righteous indignation." I suspect, Ernest, that the experience reported on page 903 is perhaps the first you have had in that line. I've had a number of experiences, and practically can give you the experience of four different men, for I've had experience in four different neighborhoods, and experience that I suppose would have been just the same if the four apiaries had belonged to four different men.

The first feeling on finding that thieves or marauders have been at work is that the case is a very desperate one, and that desperate measures must be taken; for, having once commenced work, the villains will promptly repeat it, and perhaps keep repeating till nothing is left of the apiary. That's the thought; but as the years go by you find it doesn't turn out that way, and you learn to feel that only once in about so often will there be any trouble, and you may as well take it philosophically and hold your temper.

In the Belden apiary a hive was taken, super and all, and the river near by used as a bee-escape to get the bees out. The trouble was not repeated, and that's the only time in the three or four years that bees were kept there that they were ever disturbed.

During the ten or more years that bees have been kept in the Hastings apiary there has been trouble only once. A super was taken off—I think it was in day time, when the folks were away. The sections were taken out by means of breaking them, but they were nearly empty. As that was several years ago, with no repetition since, making the average loss per annum in that apiary less than ten cents. I don't think it would be wise to think about a house-apiary there—at least, unless for some other reason than security from thieves.

The Wilson apiary has not got off so clear. At three different times thieves have been there, making a total loss of two colonies and a

super full of honey. That's the work of fifteen years.

The home apiary counts the largest number of raids, perhaps six or eight during its 35 years' history. As nearly as I can remember, the loss has been two full colonies, and at the other times the loss has been trifling. At two or three times a comb or two has been taken from the brood-nest, and at other times the venture seems to have been a failure, the bees apparently entering some earnest protests. One fall a hive was covered with a horse-blanket, and apparently started on a journey; but the journey was a short one, as I found the hive, still covered, about six feet away from its place. The blanket has never been called for.

Perhaps I might have been saved all this if the bees had been kept in a house-apiary; but is it absolutely certain that a house-apiary would never be broken into? Even if it were entirely thief-proof, it's a good deal cheaper to stand the losses I've had than the greater expense of buildings. Judging the future by the past, I may as well expect some trouble now and then, count it as one of the regular concomitants of the business, and not do any worrying over it, any more than a farmer need worry over a drouth or a flood. My assistant is not entirely of the same mind, grieving much over any loss, and often trying to make me believe that a hive has been taken, until I show her by the record-book that there was no hive on that spot to be taken. If I used little slates, on hives instead of keeping a record-book, she'd make life a burden for me, as she'd find a vacancy where a hive had been taken, at each visit to the apiary.

Except in one case I've never taken any steps to bring the guilty parties to justice. I think I know some of them, and possibly the time may come when I may have proof clear enough to follow up; but at present they're worrying over it more than I. The single case in which I did act was the case of two boys, perhaps 12 or 14 years old. About the middle of the day, when we were all at home, they started to carry off a hive between them. On being seen they made a very rapid flight. I went to their mother, and in presence of the older—the younger hid when he saw me coming—I tried to make her see that her sons were not starting on a promising career. I'm not entirely certain how fully she was convinced, but I think the boys never came back. The boy persisted in asserting his innocence, in spite of having been seen in the act, but promised he would never do so again.

'SWEET CLOVER.

E. F. T. writes: "How deep do you plow sweet-clover seed in? Would it grow on sandy soil? In what month do you generally sow it?"

Without paying any attention to the order of answering, I may say that I don't generally

sow it at all, but let it sow itself. My brother-in-law, who is a much better farmer than I, insists that it is best to have nothing else sown with it. The piece that I spoke of being plowed in was plowed in last spring about six inches deep in May, the seed having fallen on the ground the year before. I don't think it would make much difference what time the seed was put in from November till the first of June, providing it was put in fairly deep, or the ground well firmed if put in shallow. I've seen it grow well on sandy soil and on very stiff clay. I don't think it would grow on a bare rock, and it would probably not make a good growth in clear sand.

Marengo, Ill., Dec. 11.

[The house-apary would make it much more difficult for them to get at the honey, and then I am not so sure it is so much more expensive than hives in an open yard. Usually at an out-yard some sort of small shed or shop is needed to hold the tools and honey. A little more expense would make this a house-apary where tools could be kept, honey stored off the hive, and the bees wintered without hauling them several miles home, and then storing them in the cellar. There is no mowing of grass and weeds, and no leveling up of hives. In the house-apary, too, the fifty or seventy-five colonies are almost within arm's reach. In extracting, steps are saved, and robbers are shut out. Taking every thing into consideration I doubt if the house plan is much more expensive.—Ed.]

GLORY AND RENOWN,

OR DISHONOR TO THE NORTH AMERICAN BEE-KEEPERS' ASSOCIATION.

By Rambler.

There seems to be considerable controversy over the amalgamation scheme that has been sprung between the Bee-keepers' Union and the N. A. B. K. A. It is well to discuss all of the bearings in the case, in order to come to a wise decision.

I believe, with several others, that the Union has but little to gain in amalgamation. The membership of the N. A. is not large, and the dollars and prestige it would bring would not materially enlarge the usefulness of the Union. If, upon amalgamation, the N. A. could put into the Union treasury \$10,000 there might be some good grounds for the change; but even then I think there are more advantages to be gained by acting along independent lines. Let me explain:

The Union was organized for a specific purpose: "The protection of bee-keepers in the lawful pursuit of their business." It has had remarkable success in that line of work, and still stands as a menace against those who would drive out a legitimate rural industry; and the Union is an organization of which every bee-keeper in the land may be proud. The N. A. was also organized for a specific pur-

pose, of which the social feature was the most prominent; and, although I can judge only from written reports of the meetings, I have no hesitation in expressing the opinion that it has been a decided success. The topics that have been discussed have been ably handled; its meetings that have been held in various portions of the Eastern States and in Canada have imparted enthusiasm and bee-lore to many persons who would not otherwise have been interested.

The weakness of the organization, however, has been its non-representative character; and the same persons have appeared so often in the annual gatherings that the association has been facetiously called a mutual-admiration society. And now, after many years of pleasant existence and hallowed memories, its latest act is to lose all dignity, and it tries to crawl under the mantle of the successful Union.

It has been urged many times, and not without reason, that the Union should take up the subject of adulteration, and fight the adulterators of our product to the bitter end. It is all very well for us to outline a policy, but quite another thing to carry it out. The laws in relation to adulteration in one State are quite different from those in an adjoining State; and when set in motion the battle would have to be fought in every large center of trade; and the \$700, more or less, in the treasury of the Union, would be just about enough to make a respectable fizzle.

THE REMEDY.

If the suit of the N. A. to amalgamate should be rejected, as it is hoped it will be, there then arises the one great opportunity for the N. A. to arise from its humble position and become a new light in the apicultural world, and of so much and far-reaching importance that the Union will become a dwarf beside it.

Here in California we have various organized exchanges. Among the most successful is the exchange for handling citrus fruits. The plan of organization is a central office, in Los Angeles. This central head is in direct communication with auxiliary exchanges in various counties; then, where necessary, there are township exchanges, and even school-district exchanges. As the season advances, the head knows just about how much fruit there will be to market; and, though there are some hitches in the new machinery, it works satisfactorily to a large number of producers. The bee-keepers are now organizing along the same lines; and, owing to their product being non-perishable, there is no reason to doubt that success will be attained.

Now allow me to suggest that the North American Bee-keepers' Association, at an annual (or, better, a special) meeting, soon change their name to the North American Bee-keepers' Exchange, become duly incorporated for busi-

ness with an able board of directors, and with a permanent headquarters in some central State. If the N. A. would take this advice, the bee-keeping interests all over the country would take heart, for it would surely presage a systematic management of the honey markets, and put a fighting force of over 100,000 bee-keepers in the field, with a dollar or even more behind every man.

California and Arizona are already organized to forward the work here; and, being assured of a co-operative central head, every honey-producing State would immediately organize. Let the Union alone in its chosen field for the present, leaving amalgamation matters for the future to solve; but let the N. A. arise to this opportunity that invites it, and it will achieve glory and renown; but, casting it aside, it will merit—

The knell, the shroud, the mattock, and the grave;
The deep damp vault, the darkness and the worm.

E. KRETCHMER AND HIS SUPPLY BUSINESS.

Mr. Root:—In 1864 I commenced the manufacture of bee-hives, smokers, etc., in Des Moines Co., Iowa. In 1867 I removed to this county, locating at Coburg, where a steam-power factory was erected. Soon the necessity

put in a 50-horse-power engine. In the fall of '90 another building, 32x80 ft., 3 stories high, and an extension 24x40 ft., 2 stories high, were added. In 1892 another wing, 24x80 ft., 2 stories high, was added, with additional steam power, a full set of new machinery, including section machinery. In 1893 a new office was built, and an exhaust-fan put in, to remove shavings from every working machine, and dust from the entire factory. In 1894, metal working machinery for the manufacture of honey-extractors, etc., was added. In 1895 a lumber-yard, under the management of one of my sons, became an adjunct to the business (his interest therein has quite recently been sold). A railroad switch on our premises facilitates carload shipment.

E. KRETCHMER.

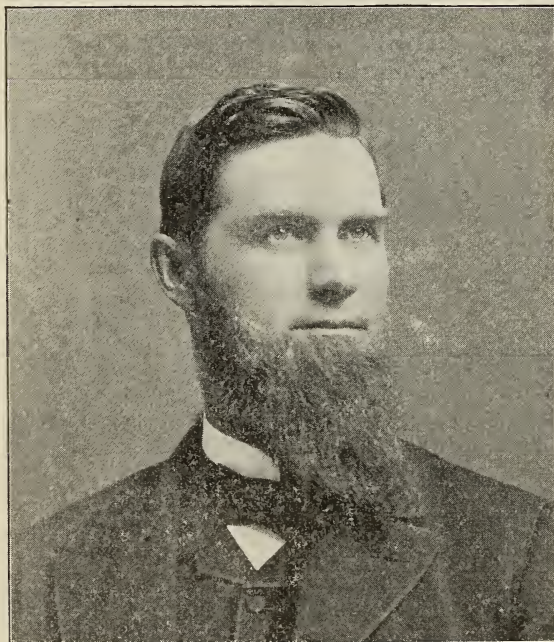
Red Oak, Iowa.

[In our issue for Feb. 15, wherein I gave brief statements, with portraits, from the principal manufacturers of bee-hive material, I omitted, as I have already stated, the name of a prominent supply manufacturer, E. Kretchmer, who has, perhaps, been longer in the business than any of us. The statement, together with the portrait, is given at this time.—Ed.]

BEE-KEEPING IN THE FUTURE.

By Evan E. Edwards.

And God said, Let there be light; and there was light.—GEN. 1: 3.



E. KRETCHMER.

for better shipping facilities made itself manifest, and in 1890 the entire plant was removed to Red Oak, Iowa, our present location. I erected a factory, 24x100 ft., 2 stories high, and

So many rapid strides have been made in apiculture within the last few years that one is ready to believe that it will be greatly extended as a science, in the near future. Never, since the days of Huber, has the prospect appeared as bright as it does now—not for a greater yield of honey, but for a broader knowledge of God's wisdom as seen in the *Apis mellifica*. The Langstroth hive, the extractor, and comb foundation, have thrown more light upon the science of bee-keeping; but there is a new discovery which, in my opinion, will clear up all mysteries. I have reference to the new discovery in photography—the use of Prof. Roentgen's rays in taking pictures of objects through opaque substances. It has been demonstrated beyond all doubt, that the cathode ray will penetrate even iron itself; and the very bones of our bodies are accurately outlined. A bullet has been photographed in a man's foot; and a needle, by the same process, discovered in the tissue of the hand. How wonderful

is light! and how much more important that word is in certain passages of the Bible! I tell you, brethren, if man can discover a light so penetrating, how searching must be the glori-

ous rays of God! With more improvements, the innermost doings of the mind may be recorded by the camera. The probable outcome of this discovery is so stupendous that nothing seems impossible. The world of science will be rearranged, and a vast amount of new knowledge appended.

Now, in its application to the science of bee-keeping what will be the condition of our favorite pursuit in the years to come? Well, in the first place all the mysteries of the bees in their own hives will be seen and read as plainly as a primer; then, by the help of the new knowledge gained, our implements will be remodeled and improved, and a host of new inventions added. When the time comes, the full biography of the bee may be written, from the formation of the egg to the music of its vibrations among the clover-blossoms. No more need of tearing a hive to pieces to examine into its condition. Just take your Kodak and picture the whereabouts of the queen, or situation of the brood, queen-cells, honey in the supers, etc. Nay, with a little more improvement you might have a representation of each colony at your "secretary," by means of an electric current conveying the pictures, and all you would have to do would be to eat your beefsteak, and give directions as to each colony.

Well, all this sounds like an Arabian Nights' story; but who knows, Mr. Root, what things are possible at the present rate the world is moving?

Alexandria, Ind.

[The world does move; but I have little faith that we shall ever be able to see the queen other than the way we are doing now. If I read the papers correctly, only the bones of our hands and feet and those near the surface can be photographed with the cathode rays.—ED.]

SOMETHING OF MY MANAGEMENT IN THE APIARY.

By F. Greiner.

The more experience I gather in the management of bees, the more I become aware how difficult it is to lay down rules to be followed year after year, with any guarantee of meeting with highest success. In my location a honey season is an unknown and uncertain quantity, and much depends still upon luck or circumstances which we have not under our control, and which we can not foretell. So our pre-constructed and most petted plans often come to naught. As not all shoes can be made over one last, expecting to fit all and every foot, so we are obliged to modify our plans to suit the seasons as they are. Some years our honey season opens from the first to the middle of June (this is rare); some years about a month later (more often), and other years nearly two months later, closing about Aug. 25 to 28. Perhaps once in twenty years we may expect honey-

dew after that, lasting, under favorable circumstances, some two weeks. With these prospects I may commence operations the fore part of May if the month comes in warm enough. We may have at this time some colonies exceptionally strong; often some begin to lay out by May 1. Now, if the honey season does not open till in July these colonies are wasting their energies unless some use can be made of them during May and June. If more increase is desired, dividing these colonies would serve a good purpose; but feeding may possibly have to be resorted to. I have always been an opponent of this kind of feeding. I don't do it; for if the honey season does fail, more sugar will be needed in the fall; and should it so happen that bees do not winter well, we may lose our investment. Furthermore, should a fair honey-flow set in soon, our divided colonies would not be well fitted to store surplus; they could not well be depended on until basswood opens. A better use of these strong colonies can be made by drawing on them for equalization. I greatly prefer to help up the weaker colonies—not the weakest, however. At this time the weather is as yet uncertain and changeable, and we must guard against chilled brood. In equalizing I take but one brood-comb at a time, replacing with an empty comb, or even one solid with honey. The latter I scrape so as to break cappings; I also select such brood-combs as contain capped brood as much as possible.

□ If, by the time apple-bloom commences, all colonies should be in tolerably good shape, some of these strongest colonies may be dequeened and allowed to raise a young queen. The old queens may be saved and set aside with a brood-comb and adhering bees, and then allowed to build up during the season. If two such nuclei are united later on, a harvest may be expected of them from buckwheat. But I do dislike to give up any of these queens. Although old they are probably good ones, and I try to save them all. Later on it will be seen that it frequently happens during the summer that we have brood-combs to dispose of. Such I use to build up the nuclei, and I generally succeed in getting them in shape to take advantage of the late flow, so they will give a surplus.

When the prospect of basswood bloom was good, and no increase, or little of it, desired, I have practiced this kind of dequeening with good success about June 20-25, or about 12 to 15 days before the basswood flow is expected; but nearly matured cells were then given. The object is to have our young queens begin to lay as basswood begins, or, rather, a few days before. Such colonies are practically in the same condition as colonies having cast a swarm, except that they are much stronger; they are in good working order.

Colonies having swarmed but once, I find, will work nicely after they get their queens, providing honey is coming in sufficiently. The Heddon method reduces the parent colony to a mere fraction, which is of little further good that season; for this reason I abandoned the Heddon method of preventing after-swarms long ago. To reinforce my young swarms I prefer to hive them on the stands of some other good colonies not having cast swarms, treating these colonies sometimes, if thought best, as the parent colony in the Heddon plan. More colonies can thus be gotten in working order for the basswood-honey flow. I do not suffer any colony to cast more than one swarm. All second swarms are returned after cutting out the queen-cells. Should a second swarm unite with a prime swarm while out in the air, I make no attempt to separate them; but the next prime swarm is hived in the hive having cast the second swarm. Quite a number of colonies are treated on this plan in my yard during the latter part of the swarming season every year; only, in practicing it, I do not wait for the after-swarm to issue, but hive the prime swarms into such hives as have cast their prime swarms five or six days previously.

Swarms issuing during the main honey-flow (from basswood) I also hive in empty hives on the same stands whence they came; shake all bees from parent colonies off and in with them; give section-cases to swarms, and use brood-combs to build up nuclei made during the earlier part of the season. All young swarms are given a reduced brood-chamber, hiving them on empty frames provided with foundation starters (strips $\frac{1}{2}$ inch wide), never using full sheets. The later the swarms issue, the more the brood-chambers are reduced, commencing with seven L. frames or their equivalent, later on using six, then only five or half-stories.

At any time, should flowers yield honey to any amount, section-cases are applied to the strong colonies. It is an impossibility to have all colonies in working order all the time; but since the flow from linden is the most reliable (with buckwheat to follow), I aim to have all colonies strong when it commences, but also have some colonies ready any time. In favorable years we may get some honey from sugar maple, fruit bloom, and clover; but only clover amounts to any thing, if any thing does at all; and I believe it is better to allow the bees to store in the brood-chamber from the first-named sources to bridge over the different periods of honey dearth. To those colonies that I expect to work in the sections during the earliest part of the season I give only a few sections, dummies being used in the cases, with chaff cushion on top. If we can supply sections with nice white comb in them, we are all the surer of the bees occupying, filling, and finishing them. Comb foundation I do not use in full sheets

in sections at any time. I feel a good deal like a prominent German bee-keeper who recently said in the *Bienenzeitung*, "If we should use comb foundation in our comb honey we should soon drive many of the purchasers of our honey away from the markets." I myself am not only a producer of comb honey, but also very largely a consumer, and I consider foundation an undesirable adjunct to my comb honey when it comes to the eating part.

Since keeping bees I have experienced only one season with a continuous honey-flow from beginning of basswood to the end of buckwheat; but ordinarily we have a honey dearth between the two, lasting from 8 to 16 days, and I find it pays me well to remove all sections after basswood is over, sort out all partly finished ones, and have them finished up on a few of the best working colonies during this time. I feed extracted honey in somewhat diluted form. When open cases are used, such course can not be so well pursued; but I believe nearly all comb-honey producers use separators now.

Although my aim is section honey, still I also raise some extracted honey, for my home use and home trade principally. I find, however, nice white extracted honey, put up in one-pound glass jars (screw-top preferred), sells as well as comb honey in some large cities; but it must reach the consumer before it granulates.

In fitting my comb honey for market I always scrape sections perfectly clean, stamp each with my name and address, put them up in 24-pound crates, glassed and otherwise neatly made, and sell early. In shipping I combine with the grape-growers of my town, and so I secure very low freight rates to the principal cities, quick transit, and safety; also avoidance of breakage, etc. It would be to the advantage of honey-producers in general if they would follow the example. Prof. Cook is right on this subject.

Naples, N. Y., Jan. 11.

CONTROL OF BEES.

THE DIVISIBLE BROOD-CHAMBER BEST ADAPTED TO IT.

By J. E. Hand.

Mr. Root:—I notice on page 19 that Dr. Miller seems to think it a thing incredible that any one should have perfect control of his bees. He says when his bees take it into their heads to make preparation for swarming they don't always mind what he says; and he doubts whether mine are much more obedient. It is evident from the above he is laboring under the impression that the prevention of swarming is necessary to the perfect control of bees. With this view of the case, perhaps he may be excused for being rather skeptical. I did not intend to convey the idea that the divisible-brood-chamber hive gives me perfect control of

the natural instincts of my bees, but that, by working in harmony with these instincts, and allowing my bees to swarm. I get far better results in work; and the divisible brood-chamber, when contracted to the capacity of four L. frames, as I use it for hiving swarms, forces the bees into the sections, and the work goes right on with the added energy of the new swarm. This is what I consider perfect control of swarming; and all who are familiar with the workings of this hive know how well it is adapted to this purpose. And so on all along down the line of the various manipulations of this hive: always keeping in view the natural instincts of the bee as we find them, we have perfect control of our bees at all times.

By interchanging the sections of the brood-chamber of this hive as often as any honey appears along the top-bar, we accomplish the same object that Mr. Boardman and others do by feeding sugar syrup—that of getting all the white honey in the sections, with the advantage that our brood-chamber is crowded with brood clear to the top-bar instead of having to buy sugar. This gives perfect control of the honey-storing of our bees; and by contraction to the capacity of 4 L. frames, or expansion to any desired limit, we have perfect control of the brood-rearing of our bees.

I have stated these facts as I have found them by actual experience in the use of these hives, as a honey-producer, and am not in any way interested in the manufacture or sale of any kind of hives. It is true, there is no hive that will please every one, and there are many good hives now in use; and perhaps in the hands of the average bee-keeper this hive would give no better results, if as good, as the ones they are using. It should be understood that this hive, without following the system of manipulation for which it is particularly constructed, is no better, if as good, than most other hives in use. But to the practical honey-producer who wants to take advantage of a short honey-flow to get the white honey in the sections, it is of real value, and I believe most of those who have condemned these hives have been compelled to do so by the improper construction of the hives as they used them.

Most people make a mistake in making their hives too large. They should not contain more than 8 frames, and the frames should not be larger than $4\frac{1}{4} \times 17$ inches inside, and by all means they should be used in a side-opening hive. This removes the greatest objection I have ever found in the use of these hives, and takes away all that uncomfortable feeling B. Taylor experienced whenever he had to manipulate those frames. Again, Dr. Miller says the man who has perhaps used it longer than any other denounces it at last. Why didn't he go a little further, and tell us that it took the gentleman referred to 30 years to find out the weak

points of this hive? and as I have used it only five or six years, I think I may be excused for not having found them out yet.

In conclusion, my advice to beginners is, go slow; prove all things, and hold fast that which is good.

Wakeman, O., Feb. 17.

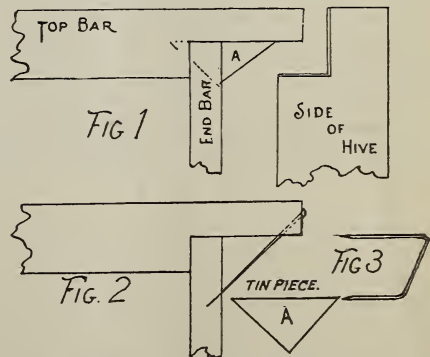
FURNITURE-NAIL SPACERS.

A FEW SUGGESTIONS TO DR. MILLER.

By N. T. Phelps.

What Dr. Miller says on p. 57 makes me feel like giving him a suggestion or two, whether he will profit by them or not. He does not seem to like the "best things" always (my judgment). In the production of comb honey I don't see how he can want a better frame-spacer than the furniture-nails, using them so that the tops of two nail-heads will come together, using just twice as many as he proposes to use. I feel sure that a thorough trial of them will satisfy any one. They will not catch on to "things" or each other. They make a little knob to hold by that makes it easier to handle the frames, or carry about the apiary, either with one hand or both, if they are placed out on the ends of the top-bar, where they ought to be.

After trying many kinds of spacers, and using some for fifteen years continuously—long before the GLEANINGS people would tolerate the idea of a spacer—I suggest to Dr. Miller that he confine himself to furniture-nails. If those do not suit him I suggest that he use staples, such as are used to fasten the rods to the edges of the slats to window-blinds, or carpet-staples, putting them in so that the tops will cross each other at right angles when the frames are in proper place in the hives. Use a punch or set to drive them with that has a rather broad end with a hole or slot to place over the staples, to drive them exactly the right depth.



As Dr. Miller wishes to cut off the end of his top-bar $\frac{1}{4}$ of an inch on each end, and put in a spacing-nail, I suggest that he don't do it. They will "catch on to things." In its stead I

suggest that he use half of a piece of tin or sheet iron, $\frac{3}{4}$ inch square, cut in two cornerwise, and driven into the middle of the top end of the end-bar of his frame close up under the projecting end of his top-bar as shown in Fig. 1.

Use a set made of a piece of iron $\frac{3}{4} \times \frac{3}{8}$ inch, and 3 or 4 inches long, with a saw-cut made in the end to set in the pieces just right, holding the end of the top-bar and the set tightly between the thumb and fingers while it is being driven in.

If that doesn't suit him, and he is expert at driving nails, let him take a wire finishing-nail, $1\frac{1}{4}$ inches long, and drive it in as in Fig. 2. Either of these will guide the frame into the right place, and not "catch on to things." A wire staple, something like Fig. 3, might be made and driven in close up under the top-bar. A tool with which each might make his own staples can be made very cheaply. If the ends of the frames are cut off $\frac{1}{4}$ inch, with the present construction of hives and frames something will be needed to guide the frame just as it is set down into position. Those little wire staples used on blind-slats, driven into the frame horizontally, close up under the top-bar, with one leg above the other, make quite good guides. One must be a little careful just as the frame is set down. These, as well as the spacers, must be put in just exactly right to be satisfactory. Many good things for bee-keepers have been condemned because they were not made exact enough.‡

Kingsville, O.

[Friend Phelps was, I believe, the first one to suggest furniture-nails as spacers; but when two of them are used in such a way that their heads or faces abut together they are not "exact enough." The heads are rounding, and sliding by each other a small trifle destroys exact spacing. If I were to use furniture-nails at all I should want the head deep enough to reach from one frame to the other as shown on page 776, last year.

The idea of having a bee-space between the end of the frame and the upright of the rabbet is good. Your devices for preventing end shuck of the frames when such bee-space is allowed may answer, but I am of the opinion something better yet should be devised. With self-spacing frames there is more propolis sticking at the ends of the top-bars than elsewhere; and it amounts to more, because, in loosening one frame, the propolis joints of all the frames next to it must be broken. The propolis sticking between the frames amounts to nothing.—Ed.]

FURNITURE-NAIL SPACERS A SUCCESS.

I use the furniture-nail frame-spacers. I have about 2000 frames with four No. 9 furniture-nails on each top-bar; bars strong 1 inch wide. I moved 60 colonies three miles without other fastenings. I prefer them to anything else I know of; but mine get stuck together, and pull out of the bars; if of pine, the nail should be made longer or cement-coated.

Poyersford, Pa., Jan. 13. W. E. PETERMAN.

CHEAP HONEY IN CALIFORNIA.

GLUCOSE THE CAUSE.

By E. H. Schaeffle.

Prof. Cook's argument, that "in union there is strength," and citing the Fruit-growers' Union as proof, reads well, but is misleading. Now, in the same number in which the professor complains that extracted honey in California is bringing but 3 cts. a pound, the market reports of New York show it to be $6\frac{1}{2}$ to $7\frac{1}{2}$; Boston, 5 to 6; Cincinnati, 4 to 7; Chicago, $4\frac{1}{2}$ to 7. If you will add freight and cartage to the California price it will be seen that there is no big margin in the handling. What is wanted is an increased consumption. The silver-miners tried in vain to get silver on the same plane with gold, but the people wanted gold and not silver; and as the supply exceeded the demand at profitable production, the majority of the silver-mines were compelled to shut down. Just so with honey. If we produce an amount greater than the demand, we must accept the poor prices paid for an article that is in over-supply, and, in consequence, a drug and drag. There are to-day more consumers of honey than ever before, with the number constantly increasing far more rapidly than the production of honey. Then why is honey a drug? Simply because its place has been filled by glucose. This fraud has not only crowded honey out, but it has turned the consumer against honey.

I worked up a fine trade with retail grocers for honey. The salesman of a packing-house fitted them up with his sham of a piece of comb honey in a jar of glucose; and the merchants, a month later, remarked to me, "Somehow we're not selling any honey now. The people seem to have grown tired of it."

The apiarist sells pure honey. That sold in original cases by the commission houses is, as a rule, pure; but the stuff sold by the grocers, by the packing-houses, and by the grocers to the consumers, is a miserable cheat that cures the consumer of his love for honey, and robs the producer, both of a market and of a paying price for his product. The only remedy is a pure-food law that carries with it a provision and appropriation for its enforcement. All the laws passed or that may be passed will benefit no one if they are not enforced. It is against the law to sell adulterated honey in this State, and there is a good fine for the offense; but as it is nobody's business to see that the law is carried out, the packer continues to disgust the people with his glucose mixture, and honey grows less and less in demand—first, because the people are disgusted with its substitute; second, because the bulk of the honey (?) sold at retail is glucose flavored with a small quantity of honey.

Murphys, Cal., Jan. 6, 1896.



PRACTICAL HIVES.

THE HILTON CHAFF HIVE.

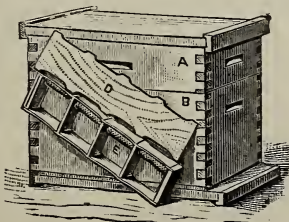
By Hon. George E. Hilton.

Perhaps there is no one item in bee-keeping of more practical importance than the hive and brood-frame we use. In regard to the frame, the Langstroth (or Simplicity) size has become almost as standard as the widths of our wagon-tracks; in fact, I am safe in saying there are more hives of this size in use to-day than all other sizes combined. The frame proper is $17\frac{1}{2}$ inches long and $9\frac{1}{2}$ deep, the top-bar being $19\frac{1}{2}$ inches long.

There are several styles made, but I very much prefer what is known as the "Hoffman." This is a heavy top-bar in depth as well as width. The end-bars are made $1\frac{3}{4}$ inches wide for about three inches down, and one side is worked off to a knife-edge, which comes against the square edge of the next frame, making them a self-spacing but not a closed-end frame, and allowing the proper bee-space between the top-bars. This is a great help to the beginner in bee culture, and does away with the honey-board.

The hive to adapt itself to this frame, and to be best adapted to the production of comb honey, should have a brood-nest $11\frac{1}{2}$ inches wide, 10 inches deep, and $18\frac{3}{4}$ inches long, which will accommodate 8 frames without a follower, and I believe a follower in a brood nest is worse than worthless. This arrangement leaves $\frac{3}{8}$ inch between the top of the frames and the top of the brood-nest, so that, when the surplus-cases are put on, the proper bee-space is preserved.

There are those who still prefer a single-walled hive; but I find in Michigan, and other States as far north as we are, some kind of chaff or double-walled hive is preferred by the large majority of bee-keepers. For those who still prefer the single-walled hive, I know of no cheaper, better made, or more practical hive than the one illustrated below.

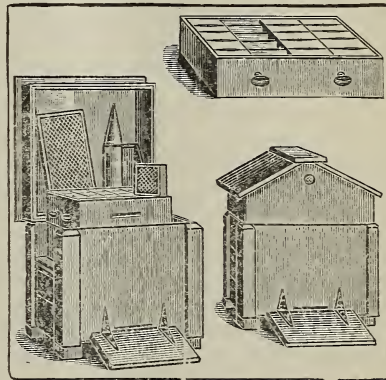


THE DOVETAILED HIVE.

But years of practical experience prove that bees winter better, and consequently dwindle

less in the spring, are in better condition for the honey-flow when it comes, and do better work in the surplus-apartment, with a hive that protects the bees against the sudden changes that are sure to come in this latitude. To do this we must have some kind of double-walled hive that will protect the bees against the extreme changes of heat, as well as the extreme changes of cold, and is always in readiness for these emergencies, night or day, summer or winter.

Perhaps no one in this State has experimented more along these lines than the writer, and I believe there are more of the hives illustrated below used between here and the Straits than all others combined. In the past 15 years of their use I have received nothing but favorable comment along the lines mentioned above.



HILTON'S IMPROVED DOUBLE-WALLED HIVE AND T SUPER.

This hive is made of $\frac{3}{4}$ lumber, ship-lapped together in a manner to make a perfect joint; is 20 inches wide and 24 inches long, and about 20 inches high to the eave of roof, and weighs (empty) about 50 pounds. The brood-nest is of the dimensions given, but can be made to hold ten frames instead of eight.

The brood-nest is raised sufficiently to admit of packing between the bottom of brood-nest and bottom of hive proper, also room for packing at sides and ends. It will be readily understood that the lower portion of the hive, being well protected against the cold, the warmth from the bees arising will care for the upper portion. To avoid condensation in this case I cover the brood-nest between the times of removing the surplus-cases in the fall and putting them in again the following season with a porous substance or chaff cushion. This I arrange by making a wooden rim about four inches deep, covered top and bottom with burlap, and filled with chaff or cut straw (which I prefer for all the packing). This rim should be made a little smaller than the inside of the hive.

When I remove the surplus-cases in the fall I make sure they have plenty of stores for winter. Lay on a piece of woolen blanket, if you have

it, or some porous substance, to prevent their gnawing the cushion and letting the chaff down among them. Then put on your cushion and let them alone until spring.

The cut will illustrate where the cushion goes, also the surplus-apartment. As will be seen, there is room in the upper story for two supers for comb honey, or a large super for extracted, and the cover shuts over all. In extremely warm weather the cover can be raised a few inches in front, giving a circulation of air all around the surplus-apartment, and shading it at the same time. The cover is hinged at the back end; and, when raised as shown in the cut, it makes two shelves for the use of the operator, which is highly appreciated; besides, there is no lifting on or off of covers as is the case in all other hives. The alighting-board, too, is hinged, and can be so arranged as to touch the ground. This is a great advantage to the bees during a heavy honey-flow.

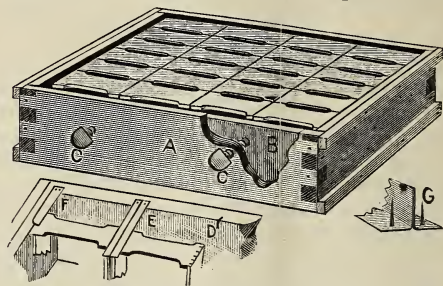
THE HILTON T SUPER; WHY I PREFER IT TO THE LOOSE TINS OR SECTION-HOLDERS.

In the first place, I am prejudiced against any thing that is more likely to be out of its place than in when wanted; and I can see no advantages in the loose tins that the stationary tins do not possess. With me a super is more easily filled or emptied with stationary tins than loose ones, especially when the thumb-screw device is attached; and the improvement I claim is in the stationary tins and the thumb-screws. I believe that, for the best results in comb honey, the sections should be as near the brood-nest as possible; and with the Hoffman frames I do not find it necessary to use a honey-board of any kind, which brings the sections only $\frac{3}{4}$ of an inch from the top-bars. I believe that, the sooner honey is taken from the crate after it is capped, the better. I go over my yards often, and remove all finished sections, which can be accomplished by loosening the thumb-screws. Any section in the super can be drawn without disturbing the others; and should the entire super be finished, it can be emptied entire by turning it bottom up upon the table or bench. Loosen the thumb-screws, and, as a rule, they will drop down $\frac{3}{4}$ of an inch, and the super can be lifted off, and leave the sections in a lump. You need no follower, as a slight jar will always bring them down.

THE HILTON T SUPER FOR CHAFF HIVE.

The reason I prefer the same arrangement for the Dovetailed hive, or in any super that uses section-holders, is, first, the holder removes the sections farther from the brood-nest, and places another network of wood between them and the sections; and because of this the bees do not enter them as readily; and with proper spacing I believe sections are cleaned quicker without a bottom-bar than with one; for I never saw a bottom-bar that the bees would not blow propolis in between the sections and

bottom-bar. This sticks them so fast that you can not take out a section without first taking out the section-holder and the four sections it contains, and then you will frequently break the bottom of the section in getting it out. In



HILTON'S T SUPER FOR THE DOVETAILED HIVE.

emptying the entire super I know of no way it can be done satisfactorily; and in tiering up it makes too much wood between the supers. They are adapted to any width of section, with or without separators; and the separators can be made to cover the entire edge of the section, and the screws keep them so tight that no propolis is put on the edges.

The cuts will show that it is no trouble to get out the first row of sections, as is experienced with the Moore crate and others that have no tensions to apply to the sections.

There are other things I could say in its favor, but will only say this: In the ten years I have been sending it out, I have never known it to be laid aside for any thing else. I send out at least a thousand of them to ten of any other kind.

Fremont, Mich.

[Dr. Miller and the members of his family have always been strong advocates of removable T tins; and when we made T supers in the first place, they were according to Dr. Miller's ideas; that is, the T tins were removable. But ever since we have made them we have had calls for supers with stationary tins, and the demand has been steadily increasing. A few among those who prefer such I would mention Mr. Harry Lathrop, of Browntown, Wis.; Mr. A. B. Anthony, whose T super we illustrated in our last issue, and George E. Hilton. I requested the latter to give his reasons in full for preferring his style of super, and the article above is the result.]

When I called upon Dr. Miller a couple of months ago I told him that the tide was changing in favor of the stationary tins, and that, so far as I knew, those who were using the loose tins used that style because they followed in his tracks in purchasing Root T supers. I tried to argue the doctor down in his position for loose tins; but he would not, under any consideration, use them, he said. Why! they could fill the supers so much quicker.

"You talk with Emma," said he (as if he thought she'd vanquish me anyhow). "She fills all the supers."

I did so; and she proposed that we three go out into the shop. There I noticed that she put in one T tin, and fills one row; another tin and another row, and so on until the super is filled.

"Why," said she, "if I had stationary tins I should have to fuss and fuss to get the sections in, because I have to get them in their exact position before they will drop on to the tins."

"Yes," said I, "but others say they can fill supers with stationary tins faster."

"Well," said she, with an invincible look in her eyes as she picked up a bundle of loose tins, "I should like to know how those people are going to clean the propolis off from them when they are fastened firmly to the super. All we have to do is to throw a bundle of them into a kettle of hot water, and they are clean."

I meekly said nothing.

"Then," interposed the doctor, "the loose tins give us a great advantage in pushing out the sections *en masse*."

All this I explained to Mr. Harry Lathrop, when I saw him later.

"Why," said he, "I have no trouble in cleaning the T tins. With a putty-knife I scrape them off easily."

Later on, in talking with some one in Chicago, I do not remember now who it was, that person remarked that, "with loose T tins, and the super pretty nearly full, the whole business is liable to tumble out in handling."

If I remember correctly, Mr. Lathrop urged the same point.

There, now, I believe I have given you both sides so far as I know them. I presume the doctor will continue to use loose T tins because he has become accustomed to them; and I presume likely, also, the other fellows will continue to use *their* ways.—ED.]



POLLEN IN SECTIONS.

Question.—Why do bees store pollen in sections? I had one colony the past season store large quantities of pollen in the honey-boxes, while the other colonies stored very little, if any.

Answer.—The storing of pollen in the surplus-apartment is largely brought about by the queen filling the brood-chambers so full of brood that there is not room enough for all of the needed pollen below. This is a thing that does not very often happen when a large hive is used; but with our small brood-chambers of the present day it is not at all unusual for this state of affairs to exist where no honey-board or queen-excluder is used. The queen-excluding honey-board, made of perforated zinc and wood, is a great help along this line, and I think it would well pay for using, on this account alone, where the brood-chamber used was not larger than one division of the Heddon hive. Then there is the break-joint honey-board, which is almost entire proof against the storing of pollen in the sections. Perhaps some of the younger readers of GLEANINGS do not know what a break-joint honey-board is. It is a honey-board so made that the openings from the brood-chamber to the surplus-apartment come directly over the center of the top-bar to

each frame, instead of being over the passage-ways between the combs, as our honey-boards of the past were made. This causes the bees to come up over the top-bars to the frames to get into the sections, or gives a crooked passageway, instead of the continuous passageway of our fathers. Such a circuitous route causes the bees to think that the room above is not a part of the brood-chamber, so they do not store pollen in it, for pollen is, as a rule, stored close to the brood. For the same reason, large hives give the same results, as in this case there is usually quite an amount of sealed honey between the brood in the hive below and the surplus-arrangement above. However, it is claimed that bees will not work as well in boxes where they can store large quantities of honey below before they commence in the sections, so it is thought that a small brood-chamber is much more preferable, even if we do have to go to the trouble of making a special honey-board to keep the queen and pollen out of the sections.

WHY BEES STORE POLLEN.

Question.—Why is it that some colonies store more pollen than others? I found one or two colonies in mid-summer that had their combs half full of pollen, while the others did not seem to have such an abundance.

Answer.—Pollen accumulates in the combs only as brood-rearing is not carried on rapidly enough to consume it as fast as it is brought in. For this reason a queenless colony will often have its combs half filled with pollen, while one by its side having a prolific queen will have hardly any in its combs. During the latter part of the season, more or less pollen is generally stored; for at this time the rearing of brood is drawing to a close, and nature has so ordained that the bees should have some pollen in early spring before they can get any from the fields; but the prolificness of the queen has more to do with it than any thing else.

POLLEN A BEE-FOOD.

Question.—Is not pollen a bee-food? Why I ask this is, I have a neighbor keeping bees who says that the bees never eat pollen; but I think he is mistaken.

Answer.—Pollen, or bee-bread, is not a food for the mature bee to any great extent, but it is used largely in compounding the chyme, which is fed to the larva, or young bee, while in the larval state; hence when the bees are breeding largely, as in June, large quantities of pollen are consumed. Pollen, honey, and water are taken into the stomach of the nurse-bee, and, by a process of partial digestion or secretion, formed into milk or chyme, which is the only food of the immature bee; and if from any reason the supply of honey entirely gives out at such times of prolific brood-rearing, the larvæ are sucked dry by the mature bees so they (the bees) need not perish; and if the famine still continues, the nurse-bees feed this chyme to the mature

bees instead of the larvæ, till all the pollen in the hive is used up. At least, this is as I believe it to be after very careful watching along these lines. At no other time have I ever known of mature bees eating pollen. I have starved several colonies in the fall when there was little or no brood, by various experiments, in trying to make old bees subsist on pollen, and never could see that they touched a particle of it.

POLLEN AND PROPOLIS NOT THE SAME.

Question.—A man of some experience with bees told me that pollen and propolis were the same. Is this so?

Answer.—No! Their offices are very different; and the man who has any idea that the two are at all alike has had no experience along this line of bee-keeping, else he would know better. Propolis is a resinous substance gathered by the bees very largely from the buds of the balm of Gilead and other trees which secrete any substance of a salvy nature which can be worked in warm weather, but which is hard and brittle on the approach of winter. It is used to stop all cracks in the hive not large enough to admit a bee, and to smooth over all uneven surfaces about that part of the hive they come in contact with. It is as different from the farinaceous substance of pollen as glue is from flour, and could in no way be made to take the place of pollen in preparing the food for the larval bees; neither could pollen be made to take the place of propolis in stopping cracks or glazing the walls of the hive, for it would crumble and fall off as fast as the bees could put it on.

HAS POLLEN OR PROPOLIS ANY DOMESTIC USE?

Question.—Can either pollen or propolis be put to any domestic use?

Answer.—I think not, although there has been some attempt made at using propolis for one of the ingredients in making salve. From last accounts the attempts resulted in partial failure, so that this has no market value; and no idea has ever been entertained, that I know of, by any one, of making use of pollen in any form or under any circumstances. In queenless colonies it often collects in the combs so as to become almost a nuisance, and we have heard of calls for some plan to remove it without harming the combs. If either of these substances could be used in domestic life it would prove a bonanza, of a partial nature at least, to the apiarist; but I have no idea that any thing of the kind will ever come to pass.

I wonder how many GLEANINGS readers are aware that one of the secrets in selling extracted honey in tumblers is to have it properly labeled.

H. G. QUIRIN.

Bellevue, O., Dec. 14.

[Yes, indeed; this is a very important point. —Ed.]



COAL-OIL-CAN FRAUDS.

After reading the following letter received by a Chicago honey-dealing firm, from one of their customers, we think you will agree with us in saying that it is a fraud to use second-hand coal-oil cans for holding honey:

Dear Sirs:—I am very sorry to inform you that I have just returned all of your last shipment of extracted honey. I thought that the California sage was all right, but I found, on heating a couple of cans (as we always do to melt the grain), that the honey had been packed in coal-oil cans, and I did not detect the fraud until the heat developed the oil. You will find that the honey is worthless, and should be returned to the producer at his expense. One can seemed to be worse than any of the others, so I emptied it into a clean can and cut the top out to see just what condition it was really in. On the inside I found that the oil had not been washed out at all—the sides of the can are covered with oil so much that the honey doesn't stick to the tin. I sent the empty can along so that you can see for yourselves.

Just examine that empty can—it shows premeditated fraud—the cap has been changed from the original top to the bottom for the purpose of covering up the stamp of the oil company. Now, I claim that the commission merchants are largely to blame for such vandalism. All you would have to do would be to notify California producers that oil packages would not under any circumstances be accepted.

Yours very truly,

HONEY-MAN.

We can not understand how any bee-keepers can have the "gall," or the poor business sense, to use cans that have had coal oil in them, for holding honey, when they ought to know that the flavor of honey is very easily affected and totally injured. What poor policy it is to try to save a few cents on cans, and run the risk of having the honey ruined and made wholly unfit for use! Surely, no readers of the *American Bee Journal* would be guilty of such an act; but if they know any bee-keeper using old coal-oil cans for honey, they should try to stop it if at all possible; for by the wrong-doing of one, or a few, the whole fraternity must sometimes suffer.—*American Bee Journal*.

[I say amen, and hope our brother-publishers will pass it (this item) around.—Ed.]

BEE-PARALYSIS.

On page 63, Jan. 15th GLEANINGS, Mr. Ford gives two or three points about this disease. Your senior editor may be right in his account of what was said in Atlanta on this subject; but my recollection differs a little from his. I understood that what was said about queens and bees not carrying the disease referred to foul brood only. If I had understood that it referred to bee-paralysis I should have kicked vigorously; in fact, I did say there, that, so far as I could judge, diseased bees was the principal way of transmitting the disease. My own experience points in the direction of the fact that sending queens from a distance has been a serious cause of the disease in my apiary.

My experience differs from Mr. Ford's in that my Italians have been much more prone to the disease than blacks. The disease is so erratic, however, that we can learn the real facts about it only by comparing experiences of many men with it. No one of us has experience enough with it to be sure we know any thing about it, except that we want as little of it as possible. I somewhat doubt your being right in your footnote. My own experience has covered at least 150 cases of the disease, if not more, during the past 15 years, both in Iowa and in Florida. If Mr. Ford or any one else has had more experience than that, they have my hearty sympathy.

Stuart, Fla.

O. O. POPPLETON.

[When I appended the footnote in question I was under the impression that Mr. Ford had had more experience with bee-paralysis than any other bee-keeper. You probably have had more cases of the disease than Mr. Ford, and we award the palm to you—a distinction that you perhaps would just as soon not have.—Ed.]

GRAFTING QUEEN-CELLS; WHEN WAS IT FIRST PRACTICED?

Dr. Miller asks, "Who first invented inoculation, or the plan of transferring a worker-larva to a queen-cell?" and was it known so long ago in this country as 1879?" To the first question I answer, I don't know; to the latter, yes. I raised about 80 queens by this process in 1876, and about the same number in 1877, and have practiced the plan more or less every year since. We call it "grafting," and think it a more appropriate name. My plan has been to remove the queen from a strong colony, and let them raise cells. At the end of 4 days remove the larvæ from all cells started, and replace with larvæ from a choice queen. By this plan I have raised some very choice queens. Occasionally they will tear down a few of the cells, and sometimes raise others. To guard against the latter, cut the cells out as soon as grafted; fit them into empty comb, or comb containing no brood; then all the cells perfected in this comb will be "grafted" cells. I think the *natural* cells, filled *naturally* with royal jelly, preferable to artificial cell-cups. In the former you find the cells well filled with royal jelly; and by selecting larvæ as young as will "lift" from the cell, you have them abundantly fed from the start, but not so in the latter; and the larvæ are liable to be neglected too long before being properly fed, unless you are careful to give them an *abundance* of royal jelly when you graft.

R. TOUCHTON.

Santa Paula, Cal.

A COAT OF OIL VERSUS PAINT FOR HIVES.

Mr. Root:—Solomon says, "There is nothing new under the sun." When I read E. B. Thomas' article in the *American Bee Journal*, I said to myself, "practical men know better." They know that oil is but the medium to mix

with a substance to spread it on the surface of wood or other material, to protect it from the action of the elements. Oil, while it may penetrate the wood, and for a time protect its surface, soon washes off and *out*, leaving the material unprotected. He says the coloring matter fades and becomes chalky. Granted; but this only proves the oil has gone out. The mineral remains some time after. A coat of oil on this renews its vitality to a certain extent, but not equal to a new coat of pigment applied. The application of a coat of oil may seem cheaper; but when we take into consideration the fact that this will endure but a short time, while a coat of paint will endure three times longer, the difference is on the wrong side.

Excuse my troubling you; but I consider it a duty to prevent the general public being misled. Finally, avoid all ready-mixed paints except of guaranteed purity. Use only pure white lead and linseed oil, mixing and tinting it yourself.

B. F. ONDERDONK.

Mountain View, N. J., Jan. 7.

[This is right according to our experience.—Ed.]

ALFALFA IN OHIO.

Mr. Root:—I bought of you last spring 10 lbs. of alfalfa clover seed, and sowed it on with oats. I also sowed red clover alongside of it. I find at this writing the alfalfa is thick and green all over the ground, while the red clover is nearly all gone. Now, I want to ask you if alfalfa will do well to sow this spring on ground that was sown in wheat last fall. If not, when is the best time to sow it, and how sow it? We sow our red clover here on our wheat in March; and if alfalfa would do to sow the same, I should like to try it further this spring.

Quarry, O., Feb. 16.

W. J. MIRACLE.

[Why, friend M., you seem to be better able to advise in regard to sowing alfalfa than we are. I am rejoiced to know that it has been so much of a success right here in our own State. My impression is, that it will not answer to sow it as early as we sow red clover. The oats you put in were probably sown late. The best success I have known around here is where the ground was very rich, either naturally or artificially, well underdrained, and where the seed was put in pretty thick, say 15 or 20 lbs. to the acre. Some writers have suggested even 25. It does not pay to be saving of the seed when the crop is to stand almost a lifetime. Get a good stand on good rich ground carefully prepared, and you have it year after year as long as you live—i. e., if it is done right. There must not be standing water at any season. Alfalfa will not bear it. I think it may be put in the ground any time from April until June 1, or perhaps later.—A. I. R.]

MALTED AND COWS' MILK FOR BEE-FEED.

I see in GLEANINGS that father Langstroth suggested the use of milk and honey for feed for brood-rearing. In the spring of 1883 I and Dr. N. P. Allen, Ex. Pres. of the North American Bee-keepers' Society, at his apiary at

Smith Grove, Ky., made a series of experiments in the use of milk and honey, and of milk, honey, and eggs. All the tests gave help to the bees when too cool for pollen-gathering; but the trouble with milk in all the tests we made was that it would sour in a short time in the feeder; and, also, if bees stored a very little in excess of consumption, it would sour in the combs and become an injurious compound; but if it could be so fed that only a daily consumption was mixed and taken up by the bees, we thought that, during cold and backward springs, it would be a help. But we would not advise its use at other times, and then only sparingly. I have never given it any further trial. We found that the milk, eggs, and honey made the best food, being richer in the albumens, but it would sour sooner. The mixture was similar in character to the custard-pie mixture, except it was made thinner. All was boiled together. I have found by trial that, for pollen, to feed cotton-seed meal outside in a covered box is good for feed when pollen is scarce.

JOHN CRAYCRAFT.

Astor Park, Fla., Jan. 8.

MALTED MILK.

In GLEANINGS, p. 142, the question is asked by F. Greiner, "What is malted milk?" The editor replies on the following page, "I can not tell you what is malted milk. Very likely it is a secret preparation known only to the manufacturers."

Now, as I happen to know something about that preparation, having used it myself, and prescribed it for invalids, I beg leave to say that, in my opinion, it is the best preparation of milk ever put upon the market, for invalids, as a recuperative diet for debility, or a weak stomach. It is also very palatable. Being of recent introduction, it appears many are not acquainted with it or its qualities, but it is pretty generally known and used by physicians, and kept in stock by many druggists.

I presume it never entered into the heads of the manufacturers that apiarists would want to use it to feed to bees. Having no personal interests in its sale I would refer you to the manufacturers for further information, and samples, which they have been very liberal to supply. Malted milk is manufactured by the Horlick Food Co., Racine, Wis.

Pleasant Hill, Ill.

A. MOSHER, M. D.

QUESTION OF GRADING NOT DOWNED.

It would seem that the question of grading will not down. In a late issue of GLEANINGS you spoke of bringing up the subject again. I think the matter was discussed all that was necessary. What is wanted now is action. All hands are pretty well agreed as to how to grade. Dr. Miller's grade suits me well enough, with the exception of one thing: A few cells uncapped next the wood should be allowed; other-

wise, where honey is made very fast, the very choicest of the honey will have to grade No. 2.

My plan now is to print small cheap slips, reading something like this: "The honey in this crate is graded according to the rules laid down by the Miller grade, which is as follows: Parties buying or selling honey will please quote this grade."

Fancy.—Combs straight, white, well filled, firmly fastened to wood on all four sides; all cells sealed; no pollen, propolis, nor travel-stain.

No. 1.—Wood well scraped, or entirely free from propolis; one side of the section sealed with white cappings, free from pollen, and having all cells sealed except the line of cells next the wood; the other side white, or but slightly discolored, with not more than two cells of pollen, and not more than ten cells unsealed beside the line of cells touching the wood; comb fastened to the wood on four sides.

No. 2.—Three-fourths of the total surface must be filled and sealed; wood well scraped of propolis.

No. 3.—Must weigh at least half as much as a full-weight section.

For the classes of honey I would suggest the four already in use, sufficiently understood from the names alone; namely, *light, amber, dark, mixed.*

The grade marked on the crate would designate the contents. Larger copies could be printed for the use of commission men and dealers. A slip could be put into every crate sold, and placed where they would do the most good. Having once gained a foothold it would surely spread.

THOS. ELLIOTT.

Harvard, Ill.

The Miller grading referred to I take from our issue for June 15, 1892, page 454.

This was a compromise of the grading suggested by J. A. Green and W. C. Frazier—the grading proposed at Albany, and the one at Chicago, combining, as I understand it, according to the best judgment of the doctor, the best points in all. Some of the former gradings were too exact, and too difficult to comply with. Others were too wordy. If I remember correctly, no other grade since that time was suggested, and I am going to assume, at least, that our readers at the time had no particular objection to it.

But, say, friend Elliott, if I have selected the right grading, and Dr. Miller proposed no other, his No. 1 does permit of a line of uncapped cells next to the wood.

I was sorry that the subject of grading was dropped some years ago, without coming to any decision. I have always felt that a poor grading was better than none at all, providing that all could adopt the same system in referring to their qualities of honey. Now, lest we get into the same snarl we did before in criticising and suggesting until no grading was left, I would suggest that, if this Miller grading is not so "awfully" bad, we adopt it.

I am of the opinion the bee-journals can do as much as or more in this line than any association or convention of bee-keepers. If they (the journals) were to agree on some system of grading, and then request all their commission men to quote prices on honey according to that grading, it would not take very long before it would be universally applied. GLEANINGS stands ready to co-operate with any of its contemporaries.—Ed.]

WINTER FEEDING; HOW TO DO IT IN THE CELLAR.

□ The question has been asked of late, how to feed a swarm in the winter, that is short of

honey. I examined my bees Jan. 8, and found several colonies that would require feeding. I took the lightest one and placed it about five feet from a hot stove in my cellar, and put a shallow feeder, holding nearly 5 lbs. of syrup, on top of the frames, and filled it with warm syrup; laid two cobs across the feeder so the bees could readily enter it, and then covered all with a warm cloth. I then put on the cap, and filled it with warm bran-sacks; closed the cover, and the job was done. In the evening the feeder was empty, and I refilled it; and this morning it was empty again, and the bees were quiet. I shall feed each of them in the same manner. Ten pounds is all I deem it advisable to feed at one time, as more than that of unsealed stores might sour, and cause dysentery. I set the hive back of the stove, and covered the front with a bran-sack, and the bees were not at all troublesome in coming out and flying to the windows. They might be later in the season. I then would confine my feeding to the night time. If I had a swarm in a box hive that required feeding I would place the feeder filled with warm feed underneath it, and close the entrance and ventilate it from the top if necessary.

GEORGE W. BASSETT.

Barre, Vt., Jan. 9.

DOUBLE OR SINGLE WALLED HIVES.

Dr. Miller:—I am about building me a lot of new hives. I winter on summer stands. Which are best?—double or single wall hives? Thermometer drops to 20 below zero at times.

Which are best for the bees to build up in in spring, for fruit-bloom? Hives are the L. pattern and frame.

GEO. L. VINALL.

Charlton City, Mass., Jan. 14.

[*Dr. Miller replies:*]

1. All things considered, I think you will like the single-walled hives best. Careful experiments at the Michigan Experiment Apiary failed to show any real advantage in double walls; and even if at times there should be advantage it would be overbalanced by some disadvantage at other times, together with increased weight and bulk. But a comparative trial of the two kinds might settle the thing more satisfactorily to you.

2. Hard to tell. Perhaps there's no real difference. In a cold time the double walls would be an advantage in keeping the hive warmer; on a sunny day, a disadvantage in keeping the heat of the sun out of the hive.

Marengo, Ill.

C. C. MILLER.

DEATH OF AN OLD BEE-KEEPER AND MISSIONARY IN PALESTINE.

Mr. Root:—My dear father departed this life after having passed forty-six years in the mission station on Mount Zion. Only recently dismissed from his post, he died near Bethlehem, at Urtas, a small Mohammedan village where

he had begun his Palestine career almost half a century ago. His last will was to be carried to his last resting-place in Bethlehem, by the Arabs, which happened on the 20th day of January. The Mohammedan women of all the environs followed the body, singing their death-songs in praise of the departed, and wishing long life to those left behind. Even the Mohammedan friends were unanimous in repeating, "His works shall follow him." My mother writes, "I prayed to God to spare him yet this once; but now he is gone home in peace. God's will be done."

He was the cause of our all following bee-keeping. His apiary near Solomon's Pools, and when friends Jones and F. Benton visited him on Mt. Zion, was the first to furnish the Holy Lands, at the beginning of the eighties. For further description, see GLEANINGS, page 672, Sept. 1, 1893. Father died at the age of 73, deeply bewailed by his widow, daughter, and five sons.

PH. J. BALDENSBERGER.

Nice, France, Feb. 7.

[It seems remarkable, but it is a fact that the very country where Christianity first took its start must now receive missionaries of that same gospel. The soil that received the seed was not the soil that would grow the great Tree of Life. It is a pleasure to know of the great work of your father.—Ed.]

BROKEN COMB HONEY CANDIED; WHAT TO DO WITH IT.

Last week I wrote you to know if there is any thing you know of to put in honey to prevent it from candying, as I have some comb in jars, and filled with extracted, and can not heat it or it will ruin the comb.

W. L. RICHMOND.

Lexington, Ky., Dec. 24.

[There is no way to prevent granulation of honey without heating. If you have broken comb honey candied, we would recommend you to put it into a solar wax-extractor. The wax will rise to the top; and the honey rendered liquid by the sun's heat, while not of first quality, will be very fair extracted honey.—Ed.]

ADULTERATED HONEY; HOW IT CUTS DOWN THE PRICE OF PURE HONEY; FIVE-BANDERS POOR.

In GLEANINGS for Jan. 1, Mrs. L. C. Axtell says their market is flooded with a sweet that is called California honey, put up in glass tumblers. This is exactly the condition in all the towns around, and especially in the city of Galva. The tumbler has a small piece of comb honey in it. Some of it is light, and some amber. I can not believe it is pure honey, as it tastes more like a poor grade of corn syrup. I was in one store, and tried to sell them some comb honey, but they said they could sell double as much of this California honey as of my comb honey, as it was so cheap—only 10 cts. per lb., while Colorado comb sells at 20 cts., and I sell mine for 12½ to 15. If all the towns in the State are flooded as they are here, some

Chicago firm is surely making a big thing of it. The Bee-keepers' Union ought to have a man in Chicago to look after these swindlers, and give them a warming-up. I think the Union should be so arranged that it would take this adulteration in hand.

A word in regard to the five-banded bees. I got queens of this much-praised strain, like many others, and kept breeding from them, but only to find out that they were the worst stingers and the poorest to winter of any bees that I have tried, and they certainly were not in it as honey-gatherers. No more such bees for me. Three-banded leather-colored bees are much more docile to handle; or even a cross between them and blacks is not so bad, especially as honey-gatherers.

G. E. NELSON.

Bishop Hill, Ill., Jan. 29.

FIVE-BANDERS AHEAD THIS TIME.

Last summer I introduced a tested three-banded Italian queen from Hutchinson, and a tested five-banded queen from Laws, to two colonies of black bees. They began laying within 24 hours of each other. The two colonies were so near of equal strength, and so even in their stores of honey and in amount of brood, etc., at the time of introducing, that I could not see any difference. Each colony was in good temporary shape, but was in need of some fall honey flow for winter. The bulk of their subsequently gathered stores came in after the two colonies had a large preponderance of yellow bees (vervain, willow-herb, and erigonum in late August and September); and I could not see any difference in the activity of the two colonies. But now, after the middle of January, the five-banded colony is nearly twice as populous, and, of course, the bees fly much more freely in sunny weather. In fact, the five-banders are all right, while the three-banders are going to need careful treatment to make them pull through till the permanent honey-flow in the spring. I recognize that this comparison of two individual colonies under such like conditions does not furnish any conclusive testimony; but I know it is just as good as lots of the adverse testimony that is sent you.

The winter has been cold and dry. Rain came unusually early in the fall. December and first half of January were cold and frosty and dry. Farming was much delayed. But a glorious storm has just prevailed, and the prospect has wonderfully brightened. We may have a good season after all. Farmers lost faith too soon.

A. NORTON.

Monterey, Cal., Jan. 20.

THE PROPOSED CONSTITUTION OF THE BEE-KEEPERS' UNION.

I have been reading the constitution of the North American Bee-keepers' Union: and as you invite suggestions from bee-keepers on the

same, I would suggest that article 5 be changed to read as follows: "Any person may become a member by paying to the secretary an entrance fee of \$1.00, and each year thereafter an annual due of 25 cents. The annual dues shall be paid on or before Jan. 1st of each year; and if not paid within three months thereafter, such members shall be suspended, and shall receive no benefit from the society thereafter unless reinstated; but any delinquent member may be reinstated at any time by paying all back dues and one year's dues in advance."

I believe that, by reducing the dues as indicated above, the membership would be increased so that, in five years, the treasury will be in better shape than it will be to keep the present high rate. But the paltry dollar is not what is needed at present so much as increase of membership; and if the dues were reduced to 25 cents, nearly every bee-keeper could keep up his membership dues, after paying the admission fee, without feeling it as a burden as he does now. I am not a member, and do not expect to be unless it is made less expensive than at present. Two seasons without a pound of honey to ship make one feel too poor to indulge in expensive luxuries.

S. H. MALLORY.

Decatur, Mich.

REPORT ON RAPE AS A HONEY-PLANT.

You ask about rape. I got a few pounds of you last spring, and it grew well here. The bees worked on it lively, but it don't pay to sow it for honey alone. I would ask you where to find a market to sell it.

Clarkson, S. D.

DANIEL DANIELSON.

[The rape that is used as a honey-plant is worth wholesale about \$5.00 per 100 lbs. It is used for feeding canaries, for making oil, and the plant is used to some extent as a forage-plant. But the new Dwarf Essex rape has taken the place of it for the latter purpose. I presume it can be sold wholesale to seed-dealers. I will make an effort to find a market for it.—A. I. R.]

FAVORS THE FIVE-BANDED BEES.

Mr. A. Norton, in GLEANINGS, calls for fair play in regard to five-banded bees, and wants all to give public testimony. With me they have proved to be the best bees I ever owned, all things considered, and I have given them quite an extensive trial.

J. F. GINN.

Ellsworth, Me.—*American Bee Journal*.

The penalty for selling adulterated honey in this State is \$100, or three months in jail, or both.

R. E. ZIMMERMAN.

Selma, Cal., Jan. 9.

[Good for California! Now if all the rest of the States would follow suit, and fine and imprison a few, right and left, to let the great wide world know that we mean business, then we might be making some headway. I am proud to say that our own State of Ohio is just now doing some vigorous work in the way of enacting laws imposing severe penalties for adulterating any thing in the way of food or food products.—A. I. R.]



SINCE our editorial notice, stating that F. I. Sage & Son had failed, we have received corrections from several sources, stating that they had not failed, but had "skipped out for parts unknown." Only a little stock was left in their store, and those who were so unfortunate as to have sent them a consignment will probably lose it. Up to within a month or two they appeared to have done a perfectly straight and honorable business. The store is now in the hands of the sheriff.

F. H. JEWHRST, of Richmond, Va., sends us a sample of crimson-clover honey that I should call fully equal in every respect to any clover honey I ever saw. It is very thick; in fact, it could hardly be made to run out of the bottle in a warm room. There is no trace of candying, and the flavor is just exquisite. The color, of course, is a light straw—the regular orthodox honey color. I wish friend J. would tell us a little more about it. If all honey from crimson clover is to be like this, then bee-keepers may rejoice.

THE California Honey-producers' Exchange gives every evidence of being a success. It has, or soon will have, good financial backing; is well officered, and is organized on thorough business principles. The California bee-keepers who are members of it will get supplies cheaper, and better prices for their honey. If this Exchange shall prove to be a success, no doubt similar exchanges will be organized in other sections of the country. GLEANINGS will help in every way possible. In the mean time, bee-keepers of the land of gold should rally to the support of the Exchange.

It will be remembered that, a few issues ago, a movement was started to build a suitable monument over the grave of father Langstroth, said monument to be purchased with subscriptions received from bee-keepers. I regret to say that so far only a few subscriptions have been received. I can not believe it is because of a lack of appreciation nor because times are so very hard, but because it has been put off. I wish to say that even small subscriptions are very acceptable—amounts of 50 cts. and \$1.00. These, as fast as received, will be credited and acknowledged; but if sent with other remittances, be sure to designate which is for the Langstroth monument fund. I believe that all the supply manufacturers, if not a good many of the dealers, should be willing to give more largely than bee-keepers who buy of them; but in the mean time let the small subscriptions come in. It would indeed be a reproach upon

us, if, having attempted to raise funds for a suitable monument, we should fail.

BENTON'S BEE-BOOK; SHALL THE GOVERNMENT ISSUE A FREE EDITION FOR CIRCULATION AMONG BEE-KEEPERS?

THE following, in relation to Benton's bee-book, was received from the Hon. Geo. E. Hilton:

Dear Ernest:—I shall read with interest Bro. Smith's objections to the publication of Mr. Benton's Bulletin No. 1. I can not imagine what his objections are, unless it is the number, and we must not expect all we ask for in this world. The book is all electrotyped, and the cost of printing is very small. My Senator, Mr. J. C. Burrows, informs me his joint resolution for the printing of 15,000 has passed the Senate, and it will pass the House. I have sent in a list of all my customers of 1895, and some others; and I learn they have all been notified of my action, and that they will receive a copy as soon as published. So you see Michigan will get her share. In addition to this I shall get allotments from my Senators and Congressmen, that I shall distribute to my new customers the coming season. Yes, I am a protectionist, and believe in looking out for my friends. It is "bread cast upon the water," and it is beneath the dignity of a nation like this to publish only 1000 copies of such a work. You know it would not supply either Ohio or Michigan alone.

Fremont, Mich., March 6. GEO. E. HILTON.

The principal objection seems to be against the printing of such a large edition, at the expense of the general public. Surely an edition of 15,000 copies, now that the plates are gotten out, would cost little or nothing, comparatively; and I myself believe that the edition will do good in educating a certain class who feel that they can not afford to buy any bee-book or bee-journal. I am selfish enough to believe that, having received this copy, a thirst for more information will be seen in the increased demand for bee-literature sold at a price, rather than to discourage it. Personally I am in hopes that the 15,000 will be printed.

OPEN LETTER TO THE BEE-KEEPERS OF THE UNITED STATES.

THE following, just recently come to hand, will explain itself:

Fellow Bee-keepers:—We have prepared for circulation a petition asking the Secretary of Agriculture of the United States to take steps to secure and introduce *Apis dorsata*, the giant bee of India, into this country. It is a duty that the government owes and is willing to render our industry (see Report of Secretary of Agriculture, 1893, page 25). Owing to the rapid disappearance of the bumble-bee, the introduction of these bees will soon be a necessity in the successful growing of red clover for seed, if for no other purpose. That these are a distinct and large race of bees, there is no doubt; but of their practical value we know nothing, and never shall until we have thoroughly tested them. As progressive bee-keepers and honey-producers, we should not rest until every spot on earth has been searched, and every race of honey-bees has been tested. We should do it for the advancement

of scientific and progressive apiculture, for ourselves, and for posterity. Prof. Cook says: "It is not creditable to the enterprise of our time that the Orient is not made to show its hand, and any superior bees that may be in existence in Africa, India, Ceylon, Philippine Islands, brought here for our use and test." Our association has taken hold of this with sincerity, and expects the united support of the bee-keepers of this country; and with their support the end of the nineteenth century will witness a new era in apiculture in which the bee-keepers of the United States will take a leading part. Life is too short for further delay. We are determined to succeed, and want your active assistance.

EXECUTIVE COMMITTEE,

Ontario County, N. Y., Bee-keepers' Association.

Copies of these petitions may be obtained by any one who will circulate them, by addressing W. F. Marks, Chapinville, N. Y.

I have little faith that the *Apis dorsata* can ever be domesticated so as to prove to be of any practical value in the production of honey; but it may be of incalculable benefit for the fertilization of such flora as red clover.

CONTINUOUS WAX SHEETS FOR MAKING FOUNDATION, NOT NEW.

QUITE a number seem to have the impression that we claim for the Weed invention, among other things, the idea of making a *continuous wax sheet*, so that it can be wound up on a bobbin, and from that unwound to a foundation-machine. Neither we nor Mr. Weed ever made such claims. While the making of a wax sheet 100 yards or more is a *feature* of the new process, it is in no way mentioned in the claims of Mr. Weed's patents now pending. His invention relates to a specific method of producing wax in the shape of a long belt, as it were, but by a plan entirely new, and differing wholly from the *modus operandi* of dipping (that is, by immersing a strip of board into melted wax); and the new process also gives a different product, superior in point of transparency and toughness—tougher because it will resist heat and cold better and the tendency to stretch in the hive while being drawn out by the bees.

The idea of making foundation in a continuous sheet or length, so that it can be reeled up on a bobbin, is quite old. It has been used a good many years in Germany. Indeed, a German work in our possession shows a continuous wax sheet reeled from one bobbin to another. Such sheets were used to a greater or less extent by D. A. Jones, of Beeton, Canada, and by M. H. Hunt. The two latter simply lapped or welded the sheets together before they went through the rolls. I am in receipt of a sample of foundation, taken from a continuous roll, made on a machine at least three years old. This sample came from Thomas Evans, of Lansing, Ia. In looking back over our old volumes I ran across an article giving the *modus operandi* in full for making foundation from one

continuous sheet. This article is found on page 514, for 1884. The writer, J. R. Park, of Laverne, Tenn., not only tells *how* to make continuous sheets, but how the same may be reeled up on a bobbin, and taken off from the foundation-machine, and reeled on to another bobbin. There are others who made such continuous sheets; but the instances I have already given are sufficient to show that the idea is old. But all the continuous sheets that have been made heretofore differ materially, so far as I can find, in the *method* of making, and in the product, from the Weed continuous sheets.

AMALGAMATION PROTESTED.

SEVERAL articles have appeared in the various bee-journals, and more will appear in our columns, strongly protesting against amalgamating the Bee-keepers' Union with the N. A. B. K. A. While I have advocated this step, I shall do so no more *if*, in the judgment of our wisest bee-keepers, it is not best. So far as I am concerned, I don't care what is done, only so the Union or something shall take hold of this adulteration business and fight it to the end. We need more fighting and legislation.

T SUPERS VS. WIDE FRAMES, ETC.

THE letter below, received from R. L. Taylor, will explain itself:

Ed. Gleanings:—One of Dr. Miller's Straws in GLEANINGS for Mar. 1 reads: "The best surplus-arrangement is asked for in the question-box of the A. B. J. T supers have a majority of votes, and wide frames come in second. Section-holders have one vote."

On consulting the A. B. J. I find that question in the question-box in the issue for Feb. 13, 1896, and I take it the answers there given are the ones to which reference is made in the above-quoted Straw. Now, be it known that Dr. Miller is the mathematician as well as the lexicographer of the bee-keeping fraternity, and I would not venture to dispute his "count;" but I am a strong partisan of the wide frames; and to show how one's feelings may affect his figures, I wish to give my count. Instead of a majority in favor of T supers, my prejudice will not allow me to count more than six out of 22 that prefer them; and one of the six thinks he would use them only if he produced comb honey; and the six are just half of what would be necessary to make a majority, as my eyes persist in seeing it. Then instead of wide frames standing second they look to me to stand square up with T supers with six votes; and for section-holders, I can not, do the best I can, make less than six votes, while we are bound to believe they have but one. Four others were non-committal. And you, Mr. Editor, though so young, are you thus early in life so well acquainted with the power of prejudice that you did not dare to count, through fear of being thrown, and hence cheerfully exhibited the white feather as you do in your note? I do not suppose that it is necessary that the doctor should make a recount.

HEATING HONEY WITH WAX.

I very much doubt the correctness of your position, that honey heated with its pure virgin wax, as it comes from the sections, will receive color or

flavor from such wax at a temperature below 165°. Of course, "chunk honey" and "old discarded combs," as you say, when melted would yield honey "off" in both color and flavor; but that comes from stains, cocoons, and bee-bread.

I will repeat the experiment when I can get some good white extracted honey; or, if you could send me 3 or 4 lbs. each of, say, two varieties, and charge to me, I would do it forthwith. R. L. TAYLOR.

Lapeer, Mich., March 5.

Just as soon as I had read the first few lines of the above letter, and before I could know what his *count* was, I laid his manuscript down and picked up the *American Bee Journal*, and forthwith began checking the votes. When through I found the results to tally exactly with Mr. Taylor's. Well, this is a good one on the doctor. I did not suppose he *ever* looked through the eyes of prejudice.

You seem a little surprised to think that I did not look up the question-box referred to, and verify the result myself. Why, I simply assumed that the doctor was *right*, because I have never been able to catch him on figures or statistics.

In regard to heating honey, I shall be very happy indeed to send you samples for you to try. Very possibly the results will tally with your former experiments. If so, no one will be more pleased to acknowledge it than I.

But I was a little taken back at what you said in the *Bee-keepers' Review*, after referring to the experiment, regarding my footnotes in general, to the effect that they are written "on the spur of the moment," "without thought," etc. Inasmuch as you imply that your feelings were "harrowed," I take it you would not have expressed yourself thus unless you were smarting under what you considered an unfair fling from me. At all events, I am not thin-skinned, and am quite willing to receive criticism, and to make the best of it, even though, in this case, I feel that your strictures were overdrawn in view of the hundreds of letters taking the contrary view.

If you could have had before you what I wrote later in regard to honey-heating, and too which you reply above, I am rather of the opinion that your statements would have been considerably modified. Of course, you do not forget that I have spoken highly of your experiments and the results secured, even if I have at times criticised. I shall continue to watch your experiments with interest.

COMMISSION MERCHANTS; SELLING AROUND HOME, ETC.

WHEN you ship honey to commission merchants, be sure to preserve all correspondence relating to the shipment—both the letters sent to you, including freight-bills, and copies of your letters sent to them. In case any difficulty arises it is much easier for us to suggest a satisfactory adjustment.

Although I called for reports of unsatisfactory deals with commission houses, only a very few have come in. Some of those that were submitted showed that there was as much blame to be attached to the bee-beeper as to the commission house; and when the latter have been clearly at fault, they have *so far* shown an inclination to make a fair adjustment. Some commission men are rascals; but those who are quoting prices for us are, so far as we know, reliable and responsible. Even with the best of them, complaints will sometimes arise—not because they are disposed to be dishonest, but because the bee-keeper sometimes does not understand all the facts, or, what is more often the case, puts his honey up in such a slipshod manner that it can not bring market prices, as I explained in our last issue.

On account of the severe competition in the great centers of trade, I would always advise bee-keepers to sell their honey around home first, all they can. In most cases they will realize better prices. And this brings me to the subject of

PEDDLING HONEY.

I know that peddling, in a certain sense, seems to be disreputable, and beneath the dignity of a good many. I know, too, that it is unpleasant to call from house to house trying to sell honey. It is discouraging, too, to be told that your choice pure honey is "adulterated stuff," and insulting to have the door slammed in your face. Well, it is not strictly necessary that you peddle from house to house. Place honey on sale at the local groceries, and then create a demand by going around giving away small samples, and telling them that your honey can be had at So and So's. Why! I know of one paint firm who, in order to introduce their goods, make a proposition to the local dealer that, if he will handle their goods, they will go around and drum up trade for him. This they do; and the dealer, without any drumming on his part, simply supplies the trade that comes to him for that paint. This paint concern handle pure goods only, and they are willing to stake their reputation upon it. They know that, when the people once know the character of their goods, they will keep right on buying them. Well, you handle nothing but the very best pure honey. If you can manage to go around town and create a favorable impression, and get folks to sample it, they will buy quick enough, providing they can believe they are buying your honey; and if they can trust their grocer they will buy it, and you in the meantime will realize several cents more a pound than if you ship it to the city, where it will be in close competition. Oh, yes! you say you do keep your honey on sale at the groceries, but it doesn't sell. But have you yet drummed up the trade by going around with samples, or as the paint firm referred to do?

We shall be having, from now on, several articles on peddling. I believe this is a most important subject for bee-keepers to discuss; and I would call special attention to the article in this issue, showing how honey may be sold on the wagon, patent-medicine style. Even if we stick up our noses at the patent medicine, it is perfectly legitimate and proper for us to follow the *methods* the agent adopts for selling such goods, providing they are fair and honorable.

I should like to hear of other plans, and hope those of our subscribers who have been successful in disposing of their honey around home will give us their experience.

A CHAT WITH AN OLD HONEY-PEDDLER; HOW
TO MAKE OFF GRADES OF HONEY MOVE OFF
RAPIDLY.

Later.—Since writing the above I have had a pleasant call from Mr. Chalon Fowls, of Oberlin, who makes quite a business of selling honey around home. He has built up quite a trade in Oberlin, Elyria, and Lorain. The two latter are towns about nine miles distant from Oberlin. He sells nothing but choice honey, puts it up in packages himself, and delivers it with his horse and wagon to the groceries. They all know him as the honey-man, and the one who sells only pure goods. Knowing that he had had a large experience, I read over to him what I have written above, and asked him for suggestions and corrections.

"How about selling honey on commission?"

"I have never had any experience in that line," he replied. "I can sell all I can produce, and more too, direct. I notice," he continued, "that you have not touched much on the matter of educating consumers on the uses of honey. I explain how it may be used, for cooking. We use honey largely in our house in place of other sweets, for making cookies and the like; and dark honeys are just as good as the best. Honey that I take in the solar wax-extractor, and that which is a little off and dark, will make just as nice cookies as the very nicest and best extracted honey. When out peddling I take with me, written in duplicate with the typewriter, one or more recipes for cooking with honey—such recipes as our family have tested and *know* to be good. Sometimes I take with me a honey-cake made with some dark off-grade honey I am offering. I give a small sample of this cake to the lady of the house; and if she likes it (as most of them do) she will buy the dark honey for cooking, and the first quality for table use."

"Say," said I, "why not send us copies of these choice recipes? We will get out a lot of them on the press, and then I think it would be a good idea to put with them something in the line of *Why Eat Honey?* One of the best things I have seen in this line is something that appeared in the last *Review*.

"I notice also," said Mr. Fowls, "that you

have said nothing about the fact, now recognized by nearly all physicians, that honey is the most easily digested of any of the sweets. I have had several calls for honey by invalids who said their doctors had recommended them to eat honey in place of any other sweets."

"Do those people come again?"

"They do, and say it agrees with them."

"Prof. Cook, you know, has long maintained that honey is digested nectar."

"Do you," I said, changing the subject, "sell to groceries as well as peddle out the honey?"

"I do," he said; "but some of them do not like it, and won't buy of me."

"There is no reason why they should object, for they know you to be the honey-man of the town, and you have a right to sell your own product."

"Yes," said Mr. Fowls, "and I am very careful not to sell under the grocers' prices, and tell them so at the time of making my deliveries. Then when I peddle to the consumers it is understood they can get it of me or at the groceries."

"Do you ever run across adulterated honey?"

"In Elyria I saw tumblers put up containing glucose and honey. It was actually labeled 50 per cent glucose, 50 per cent honey."

"That shows," I said, "that stringent pure-food laws in this State are having some effect. But how in the world can they sell such stuff if the consumers know what it is?"

"Oh!" said he, "foreigners buy it because it is cheap."

"I will tell you what I think," said I. "If an analysis were made, I believe that about 99 per cent of that so-called honey and glucose would be pure glucose, and the other one per cent would be a little piece of dried comb stuck in, to give it the appearance of honesty. The concern that puts it up is probably afraid to put it out without labeling it as adulterated. I should be inclined to believe they would take advantage of the statement on the label, and make a larger per cent of adulteration than was called for."

"Say," said Mr. Fowls, changing the subject, "I wish you would solve for me this hive question. I want some more hives, and I don't know whether I want 8 or 10 frames."

I drew a sigh, and asked him to draw up to me a little closer.

"Let's see. You produce extracted honey mostly, don't you?"

"Yes, sir."

"Well, then I would recommend the eight-frame size, using two stories, one above the other."

"I am afraid I can't get brood enough in one eight."

"But"—

Oh! I forgot that we had closed down on the large-and-small-hive question.

OUR HOMES.

Ye are bought with a price.—I. COR. 6:20.

I do not know just where it happened, and I do not know just *when* it happened; but something like the following occurred, so I am told, not a great many years ago. There was to be an auction; and among other things a lot of slaves were to be sold. They were standing about waiting for the time when the auctioneer should commence. There were men, women, and children who were to exchange owners. Some of them were careless and indifferent. I suppose most of them had been sold before, and therefore took it in a sort of philosophical way as the African people, the greater part or them, are in the habit of taking such things. A colored preacher spoke from our pulpit not many days ago. He was not only a scholar, but an orator of no small talent. At the close of his remarks he spoke of the good qualities especially pertaining to the colored people. The last among the things enumerated was hopefulness. He said there was no people on the face of the earth who were so bright and hopeful under all circumstances as the colored race. They would sing their jubilee songs, and rejoice, even under the most untoward circumstances. They are always looking for something better and brighter, and are never discouraged. By the way, did any of you ever hear of a full-blooded negro committing suicide? Perhaps this very characteristic specially fits them to endure *service* better than any other race. In any case, we ought to honor them for this very trait.

Well, among the crowd that were awaiting (they knew not what) was a young colored woman—in fact, a girl; and, to tell the truth, she was remarkable for her look of refinement, gentility, and attractive appearance. She stood alone; and the sadness and terrible sorrow that seemed to weigh her down showed itself in her otherwise bright and beautiful face in a way that attracted attention generally. A Christian man of culture and refinement was looking upon the scene. He was probably a stranger, not only to that locality, but evidently to such scenes, and was touched by the sad countenance of the young girl. He ventured to make some inquiry. One of the colored people explained:

"Oh! this is the first time she has been sold. She is not used to it. She was brought up on a plantation where they were very kind and good to her. She can read and write. She never expected to be sold; but her master died, and they got in debt, and finally the property had to be all closed out."

The humanitarian, for such indeed he was, looked again and again at the young girl, and finally inquired the price. It was very high. Others had their eye on her already. I need not go back and call up these sad memories in the past history of our country; I may only hint at what her feelings must have been when she contemplated that, before the sun went down, she would have to be sold to *somebody*. It did not matter who the man was, or what his morals, or for what *purpose* he wanted her. If he could raise the money she would be his, body and soul—or, at least, *he* would so regard it.

The good gentleman debated quite a time, but finally went up and paid the price, unusual and excessive though it was. Then he went straight to the proper authorities and procured the necessary emancipation papers. When they were finished in due form he simply presented them to her, made his bow, and started to walk away. The thing was so sudden and unexpect-

ed she could not comprehend it at all. She started to follow him for an explanation. One of her fellow-slaves, who could also read, explained to her what it was. Said he:

"Why, you are *free*, don't you see? Here are the papers. You are not obliged to follow that man, even if he did 'pay the price.' You are *emancipated*. Here are the papers. You are not obliged to follow him or *anybody*. From this time forward you are a *free woman*. You can go *where* you please and do as you please."

"But did this man pay the price? Did he make me free? Then I will follow him to the last day of my life. I will serve him with the last drop of blood that courses in my veins. My whole *life* henceforth shall be to minister unto him and his, if he will *accept* such service in token of my gratitude for this great and *unspeakable* gift of *freedom* and *emancipation* from that which might have been *worse* than death."

Some time afterward somebody visited this man's home. A bright presence pervaded it all. There was a cheerful and willing step, a *joyous* service that was so unusual, that the visitor asked her how she could always be so bright and good-natured and light-hearted, even though things were discouraging at times.

"How is it, my young friend, that you, a *servant*, can be the brightest, happiest, and most joyous one of the whole household?"

She replied:

"O my dear sir! you are mistaken. I *am* a servant, but I am not a slave. He whom I serve, once *bought* me 'with a price.' He *paid* the price, and then he made me free. '*All* to him I owe.' Do you think I can ever forget that kind act from this good man? What a poor recompense it would be if I should ever even *once* in my *life* forget this deliverance—this *emancipation*—so far forget as to show either by look, word, or action, the least *trace* of ingratitude! What would *you* think of me if I should forget this, or if I should forget to be bright, happy, and joyous and grateful, while it is my privilege to serve him, and to feel that I am of some use in his household and in ministering to those I love? I love them, and it is a joy and privilege to serve them because *he* loves them."

Dear reader, I think you see the point I am trying to make, even before I make the application. I do not know how many of you, but I am sure a great number of my readers can say in their hearts as did the poor slave-girl, "*He* paid the price, and made me *free*. I was in the bondage of sin. I was a slave to evil appetites or evil passions. I was helpless, and was undone and ruined. I had *nothing* with which to redeem myself. No friend was willing, even if he could have done so, to pay the price and set me free."

Jesus paid it *all*;

All to him I owe.

Now, then, dear friends, this being true, can we not, as consistently as did the poor slave-girl, say, "I will spend my life in serving him?" God have mercy on me if I ever forget this great act of his. He not only paid the price, but he died; he shed his precious blood that *I* might go free.

The above little incident that I have told in my own language, with perhaps some additional thoughts of my own, was given last evening in an address by Dr. Schaufler, whose name has become prominent as the leader of the Bohemian church work in Cleveland. As I listened it brought back to me, oh so vividly! the time when I stood a slave—yes, a slave to *sin*—when I stood awaiting the *next* act of my cruel masters. The older readers of GLEANINGS have heard the story; and some of the newer ones

have wondered why I have kept on month after month and year after year, with that same old, old story of Jesus and his love. It occurred to me this morning that I could answer all such by the little plaintive illustration I have just given you. The deliverance came in one day—yes, almost in a moment of time. I have not been a *cheerful, joyous* servant of his *all* the while during the years that have passed; but God knows I have never been *disloyal* to him for even one moment since that time. Those who have known me long enough will remember the sudden change and the sudden turning-about. My whole heart and *soul* were turned about. I commenced to work for somebody *else* on that very day. And let me say again, that not for one instant in the twenty years and more that have passed since then have I ever *regretted* the new service. I have never yet, sleeping or waking, once wanted to go back and serve my old masters. Again and again in my dreams have I found myself groaning under the old burden, and fettered with the old harness. But, oh what was the rejoicing when I awoke and found it *only* a dream! Sometimes in these dreams I have said, "Lord, save me or I perish." And again and again of late has the answer come, even while I slept. On awaking it has been a most pleasant thought to review, that Jesus answers prayers—prayers uttered in our sleep, and he sends *deliverance*, even in our sleep.

Once in the delirium of a fever one of the emissaries of the evil one persuaded me that I had been "cursing God" on account of the pain and distress. But even in the delirium I rose up with such an emphatic contradiction that an angel of peace spread his protecting wings about me, and whispered in gentle and loving accents, "No, no, child. Not once since thou didst start to serve the Lord has there ever been a disloyal or complaining word."

□ You may say the above was only the result of a fevered imagination. But, dear friend, feverish or not, it has been a comfort to me, for I know it is *true*. Satan has tried hard. He has at different times sifted me as wheat; but I have never once—no, not even for the briefest instant—been persuaded to let go my hold on that strong arm—that arm that "paid the price" and set me *free*. And, oh what a joyous and loving service has been running all through these years since then! Again and again has come the comforting thought that I am not working for self, but for him who made me free—who not only delivered me then, but ended *all controversy* in regard to whose I am or to whom I belong, by paying the price in full. And then my emancipation papers are so made out that nobody can dispute them—not even my worst enemies—not even *Satan himself*, thank God. The prince of darkness himself has never once suggested there was a fault or fraud in the *papers*. He has tried several times to tell me that I am hampered, and a prisoner still. Yes, I am hampered a little sometimes, but I am not a prisoner. I belong to him who paid the price. But I *want* to belong to him, *soul* and *body*, for *evermore*. There is no joy I have ever found like that I have experienced in his service, and in serving those whom *he* loves. Once in a while I get, oh such precious words of commendation and approval! I get such wonderful rewards. Why, sometimes when I think I have been having a hard time, after it is over—yes, may be after weeks or months have passed, come the cheering words, "Verily, I say unto you, inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me."

In the little incident I have told you, two

things stand out prominently. First, there was a good man—a *Christian* man; and on the other hand there was a good and grateful servant. It is not every one who would have realized and *recognized* the great deed that had been performed. I fear we who are advanced Christians are sometimes guilty of the sin of ingratitude. We forget the *magnitude* of the gift; we forget that we have been *redeemed*, and transformed from death unto *life*. We slip back, and become ungrateful. May God help us.

May I venture just one more thought before closing? In the old life of bondage and slavery we are powerless to do good. We are of no use in the world. In fact, as long as we are slaves of self, and live only for selfish purposes, we are very likely to be a curse to humanity instead of a blessing. In the new life, if we are honest and grateful servants, we are helping the whole wide world to be better. We are striving every day to bring in new recruits, away from the bondage of Satan and selfishness out into the light of freedom and a sincere love for the welfare of others. Oh what a need there is that this emancipation work should go on!—that men should be emancipated from greed and self, and taught to love *other* people instead of self, and to love Jesus our captain, our friend, and our emancipator! For some days back the fragments of a hymn have been floating through my mind. I have not yet found the book that contains it; but four lines of the chorus, if I remember right, run something like this:

And then we'll sing around our King,
And crown him blessed Jesus;
For there's no word ear ever heard
So dear, so sweet as Jesus.



A CROP EVERY SIX WEEKS, WINTER AND SUMMER.

What kind of a crop? Why, a crop of lettuce; and a valuable one too, I assure you. When I was in Columbus, in January, I got up early in the morning and went over to the State University. Of course, I gravitated at once toward a large greenhouse, 100 feet long or more. The center bed, perhaps 8 feet wide, contained a crop of Grand Rapids lettuce almost ready to cut, and it was one of the most beautiful sights I think I ever saw. Prof. Hunt seconded my exclamation, that there was hardly a plant in the hands of the florist that made a more striking and beautiful display than a full crop of Grand Rapids lettuce when it is just in its prime. They are working exactly on the plan I have given you in some of our back numbers. The seed is sown in the flats shown on page 76, and they are transplanted once into the flats before going into large beds, a sufficient number of plants being kept constantly on hand to fill up the large bed just as soon as a cutting is made. In this way they average a crop from the bed once every six weeks. I can not give you the figures just now; but at this date, March 10, we are sold out on lettuce, and are paying a neighboring gardener 15 cts. per lb. for what we sell. It would be a poor crop indeed that did not average half a pound to the plant, and the plants stand 7 inches apart all over the bed. Of course, you have got to attend to things, and know your business, to harvest a crop every six weeks; but any one who

is really anxious, and has average skill, can learn the trade if he sticks to it.

After I was made happy by seeing how successfully they managed the lettuce-greenhouse, Prof. Hunt took us over to the creamery—I guess that is what they call it—and showed us how they teach Ohio boys to make butter by the use of all modern inventions and appliances. Every thing was as neat and tidy, and bright and clean, as the appliances in the office of a city merchant; and the students were using all the modern inventions in the line of electricity, chemistry, etc., taking the subject in a scientific way, from the proper caring for and feeding the cow, until the gilt-edged butter, cream, or cheese, is ready for a class of consumers who are ready and willing to pay for the finest food product that skill and science can bring out. I hope our experiment colleges will teach the boys, above all things, to be *honest*, and to stand out against fraud, trickery, and deceit *wherever* found.

THE EARLIEST POTATO KNOWN.

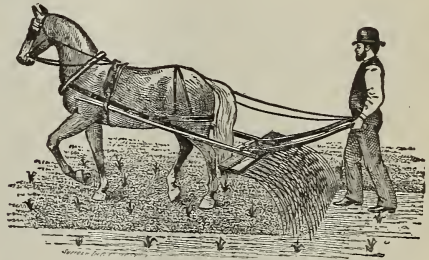
On page 153, Feb. 15, A. G. Aldridge says the Bliss Triumph matures with the Early Ohio. From the number of protests we have received in regard to this statement, we feel sure that friend A.'s experience does not agree with that of others; for everywhere else the Bliss Triumph is placed at the head of extra-early potatoes. You will remember our Ohio Experiment Station says, on page 151, Feb. 15, that the Bliss Triumph is identical with Salser's Earliest. It seems to me a little unfortunate that this same potato should be sold under so many different names. It is the potato used largely in the South for second-crop seed. And by the way, the Georgia Experiment Station Bulletin No. 29 is one of the most valuable bulletins ever put out, in my opinion. It is devoted entirely to Irish potatoes, illustrated all the way through with half-tones of all the prominent new potatoes. It is quite a large-sized bulletin, and the demand for it has been so great they have been obliged to make a reprint, and charge 6 cts. in stamps to applicants outside of the State of Georgia. Address R. J. Redding, Experiment, Ga.

Now, the Bliss Triumph has two or more names. The new White Bliss, which Arthur L. Swinson brings to our notice on page 122, Feb. 1, is a sport of the Bliss Triumph, and is the same thing, only being white instead of red. It is known and advertised under three different names—White Bliss Triumph, Wood's Early, and Pride of the South. We have decided, you will notice, on calling it White Bliss Triumph; and the seed we furnish is second-crop. If you don't know about this second-crop business, the bulletin mentioned above will post you. It is certainly an important item in potato-growing. The Georgia Potato Bulletin says of this White Bliss Triumph, "Comparatively new, but unquestionably the earliest of all." Now, please bear in mind, dear friends, that this experiment station made a test of 240 of the principal varieties of potatoes now known throughout the world.* Their testimony being entirely unbiassed, is, without question, almost beyond price in value. It should be remembered, however, that potatoes exactly suited for the climate of Georgia are not always the best ones here in the North.

*Not only is this potato pronounced the earliest of all, but it gave a yield of 220 bushels per acre. The largest yield per acre was Early Pride, 307 bushels. This stands No. 1. In order of yield the Pride of the South is 91, and Early Ohio stands No. 218 in the order of yield, at 137 bushels per acre.

THE BREED WEEDERS.

So many inquiries have come in in regard to these tools, I have thought best to tell our readers what I know about them. We have in our possession one of the first got out. Of course, it is an imperfect tool compared with the one we figure below. The first season I received it we grew a heavy crop of potatoes without bringing a hoe into the field at all. We first worked them with the Thomas smoothing-harrow, and afterward with the Breed weeder, keeping it going among them until the plants were nearly a foot high. After going through them, a good many people said the potatoes were ruined—they would never do any thing in the world where they were disturbed and knocked down after that fashion. But the next morning, however, the patch would look pretty fair, and in three or four days they would get up so that one would hardly know any thing had "happened." The next season the ground was so wet we absolutely could not get into it with the weeder on our early crops. By the time it was dry enough, the weeds were so large the machine slipped around them, and treated them like plants. We had to use the hoe. The cut below will make the machine plain.

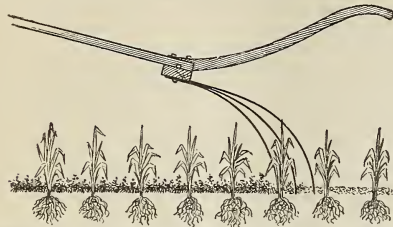


ONE-HORSE WALKING WEEDER AND CULTIVATOR; 8 FEET LONG; PRICE \$14.00.

The secret of success with all these machines is in doing every thing at just the right time. As soon as your potatoes are planted, commence running the smoothing-harrow or weeder. Whenever it rains, as soon as the ground is just right for pulverizing, go over it with the weeder, stir the soil, fine up the lumps. If you have had experience in the business, you know that moist soils, especially clay soils, must be just dry enough, and not too dry, to pulverize to advantage. There comes a time after every summer shower when the ground is just right; in fact, the soil fairly seems to invite being stirred and pulverized. Sometimes there are only a very few hours in the day when the circumstances are just *exactly* right. When this time comes, the gardener should be able to put every thing aside and thoroughly stir not only every acre but every inch of his ground. Let us now go back to the picture.

There is a little crust between the plants—may be some little weeds just visible if you get down on your hands and knees and use your spectacles to find them. The weeder will stir these weeds up so that, if they are not killed outright, they have got a terrible setback; but the corn or potatoes that have got depth of root will spring over to one side or the other, and let the vibrating steel teeth get through. The next cut shows how it works. The weeds ought to be killed before they get to be visible at all. But perhaps we can not work with such thoroughness as to do this. Never mind. If you get them out with their roots loose from the dirt they will die unless there is another rain. In fact, if another rain comes you must

give them another stirring at just the right point. If another rain does not come, you should stir the ground anyway by the time the weeds begin to recover enough to start to grow again. I have sometimes thought that the



Cross section cut showing the way in which the vibrating teeth tear to pieces the small weeds while they slip around the larger well-rooted plants.

man who works with a Breed weeder ought to have only so much land to go over, and he should have nothing else in the world to hinder the work being done, not only on the very day but almost the very hour it *should* be done; then he has the upper hand of things, and success is sure.

There has been a good deal of talk about a hand-weeder; and our friend Boardman, whom you all know so well, has a home-made one that he constructed himself, that gives excellent satisfaction. The manufacturers also make a hand machine and hoe combined; price 60 cts. I believe, however, they do not give it a very high recommend. A hand-weeder, with wheels, to work like a hand cultivator, is made to work among onions. This, I believe, is a decided success; price \$10. It is operated by one man. I wrote to the manufacturers that my impression was that the Breed weeder was not very practical unless the ground was very clean, free from stones, stumps, sticks, rubbish, etc. Here is what they say about it:

You need not put too much stress upon the matter of freeing the ground from all trash and rubbish, because they are so easily raised that, if some of the trash collects on the fingers, it is easily dropped; and yet it would be well to have the ground perfectly free. We would not recommend its use on ground where cornstalks had been fed down and the butts plowed under in a shiftless manner. If the plowing has been well done, and the weeder used once over the ground to rake this up, there would be but very little trouble.

They also write in regard to using it on clay soils:

While you are writing up the weeders, we wish you would call especial attention to their great value in a clayey soil, as with them the formation of a crust is entirely prevented. You can start them sooner after a rain than you can any other kind of cultivator; and their work is so rapid that the field is gone over before the crust has a chance to form. Then, again, in times of drouth the dust blanket, or mulch, which they form on the surface of the ground, almost entirely prevents the evaporation of the water in the ground below. It is really held there to be appropriated by the plants.

Below is something in regard to using the machine among currant and gooseberry cuttings:

We inclose a slip showing what Mr. Cotta, one of the leading farmers of Illinois, says of it. He wrote an article which appeared in a recent number of the *Orange Judd Farmer*, giving a full account of his work with the weeder. We knew nothing of this until we saw in another paper a long extract from this article. Mr. Cotta also sent us a local paper which published his essay on surface cultivation delivered at a recent Illinois State institute. This had a half-tone cut of a gooseberry-bush—roots and all—which was grown from a cutting last sea-

son. It is a wonderful exhibit of the benefit arising from a dust mulch, when we consider how very dry it was there last year.

Below is the clipping referred to:

The Zephaniah Breed weeder is the greatest tool for conserving moisture I ever saw. On examining the soil in a very dry time in the late summer I found that soil gathered two inches below the surface was moist enough to ball in the hands, while the top $\frac{1}{2}$ of an inch was as dry as could be. The ground two rods away, that had been well cultivated, was still dry. I kept one acre of strawberries in hills, and began using the weeder the day I set them. The plants made a remarkable growth, although we had very little rain after setting. I used it on one acre of currant and gooseberry cuttings set the previous fall, beginning when the ground was dry enough to work, and continued it on the currants until fall, and on the gooseberries till the tops spread six or eight inches without removing any teeth. It has been very dry here, but the gooseberries have made a marvelous growth, and now average larger than two-year-old bushes.

Freeport, Ill.

H. R. COTTA.

Our readers will remember that I visited Matthew Crawford, of Cuyahoga Falls, O., last season, just after his boys had been running a weeder through a new plantation of strawberries recently set. The ground was lined up, and fixed as nice as or nicer than a gang of men could do it with hand-rakes; and yet they did an acre or two in a part of one forenoon, and not a strawberry-plant, so far as I could see, was thrown out.

To sum up, if you get your ground in the right sort of trim, and you are one of that sort of men who drive their work without letting the work drive them, you will probably make a success of the Breed weeder—that is, if you put your skill and brains right into the work. If you are trusting to the average "hired man," and you are away somewhere else, I do not believe you want a weeder. In fact, I don't believe you want a garden either.

For pamphlet illustrating the weeders, address the Z. Breed Weeder Co., 26 Merchants' Row, Boston, Mass.

THE WHITE GRUB; HOW TO DESTROY THEM.

In December, while plowing I put a dozen white grubs into a can partly filled with dirt, and set them in the fence-corner to see what effect freezing and thawing would have. About the middle of January I took them out and found that they were entirely destroyed, legs and heads being about all there was left. Therefore, if you want to clear a field of them plow it when it is so cold they can't burrow down again.

W. R. GRANNIS.

Lodi, O., Feb. 5.

Special Notices in the Line of Gardening, Etc.

By A. I. Root.

ALSIKE CLOVER—REDUCTION IN THE PRICE OF SEED.

Until further notice we will furnish alsike, medium clover, mammoth or peavine, and alfalfa, each and all at the uniform price of \$5.50 per bushel; $\frac{1}{2}$ bushel, \$3.00; peck, \$1.60. The above prices include sack to ship in. Prices by mail, postpaid, 1 lb., 25 cts.; 1 lb., by express or freight, with other goods, 15 cts.

SEEDS BY MAIL; REMEMBERING THE POSTAGE.

When ordering seeds by mail, be sure to remember to include 10c per lb. or 1c per oz. additional for postage. Some of you may ask why we do not make our prices high enough to include postage. I answer, because so many of the friends have their seeds sent by express or freight with other goods. It would be unfair to take postage in this case where no postage was needed. You may say one cent on an ounce is but a very small matter; but if you will compare our prices with those of other seedsmen, especially our *ounce* prices, you will see we are away down below most of them. We have plenty of help here at the Home of the Honey-bees, and our boys and girls are very glad to work cheap rather than not work at all; therefore we can at-